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INSECT ENEMIES OF BOOKS



BY

HARRY B. WEISS & RALPH H. CARRUTHERS



NEW YORK

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THE MORE IMPORTANT INSECT ENEMIES OF BOOKS

By HARRY B. WEISS

MANY persons have written about "bookworms," some humorously, a few intelligently, and many with only a hazy knowledge of the subject. These writings vary in length from a few paragraphs to a fat monograph and, although there are many good papers dealing with certain insects injurious to books, these are scattered in various journals and few librarians are aware of them. Although serious insect damage to books in temperate regions is not widespread, the fact remains that every so often, certain species gain access to libraries, in spite of modern equipment, and constitute a serious threat to valuable books and manuscripts and entail expense and worry in combating them.

From early times there have been various references by naturalists to insect injury to manuscripts and books, and many persons are familiar with the "worm holes" of incunabula, beginning with the wooden covers and extending for various distances through the pages. Aristotle, in Chapter 32, book V of his *Historia Animalium*, wrote twenty-two hundred years ago: "In books also other animalcules are found, some resembling the grubs found in garments, and some resembling tailless scorpions, but very small." His "tailless scorpion" is probably the book scorpion, *Chelifer cancroides*. Pliny had little to say upon the subject three hundred years later, and it was not until 1665 that certain species began to emerge from the haze of uncertainty surrounding them.

At that time Robert Hooke, in his *Micrographia*, described the bookworm as a "small silvery, shining worm or moth," and illustrated his description by a drawing, which identified the insect as a species of *Lepisma* or "silver-fish," or "fish-moth." Since that time the literature on bookworms has slowly accumulated, and among the contributors one notes the names of such well-known entomologists as Kirby, Hagen, Riley, Houlbert, etc., and of such bookmen as Blades, Dibdin, Jackson, etc.

It would be of interest to review the contributions of these men in some detail, but after all, it is necessary to remember that in this paper, the practical control

of insect infestations in libraries is of more importance than entomological history. William Blades in *The Enemies of Books*, devotes a chapter to the bookworm and mentions specifically certain species that are important enemies of books. It is charming to read, but of no help to a librarian confronted by an insect infestation. On the other hand Mr. Holbrook Jackson's account of book insects in his *Anatomy of Bibliomania*, wherein he mentions the work of many writers, and quotes the opinions and quaint remarks of various observers, though his entomology is correct, leaves one in a sort of bewildered state, clutching only the fact that a book worm may be one of several species.

The writings of William R. Reinick, published some years ago, contain much good advice relative to the care necessary in preventing insects from gaining access to books. His statements relative to certain insects and their feeding habits are, for the most part, correct, and he brought to his investigations an enquiring mind. However, his work is invalidated from an entomological standpoint by his habit of generalizing from too few, inconclusive experiments and observations, and by his unsupported speculative remarks and theories.

Only a few books devoted exclusively to book insects have been published. Two authoritative ones are *Les insectes ennemis des livres* (Paris, 1903) by C. Houlbert, and *El libro y sus enemigos* (Montevideo, 1917) by Arturo Scarone. In New York in 1898, a little book entitled *Facts about Bookworms* was written by the Rev. J. F. X. O'Conor. This is a short, readable account involving a few species and although the entomology is fairly correct, the illustrations could not be worse.

At times in the past, the alarm caused by book pests was considerable enough to cause various societies to offer prizes for the best methods of controlling insects injurious in libraries. In 1774 the Royal Society of Göttingen offered such a prize. Houlbert's book on *The insect enemies of books* won the Marie Pellechet prize at the International Congress of Librarians at Paris in 1900, and there were others.

The Royal Society of Göttingen was anxious to know the kinds of insects destructive to records and books, the various materials such as glue, leather, wood, paper, etc., on which such insects fed, and the best means of controlling such pests and of protecting books against their ravages. Dr. Herman of Strasbourg and Mr. Flad were awarded the premiums and Matthias Koops in his *Historical Account of the substances which have been used to Describe Events, and to Convey Ideas, from the Earliest Date to the Invention of Paper* (London, 1801, 2nd ed.), summarized their answers. It is not necessary to mention the various species in Mr. Koops' extract, but the recommendations for control are interesting enough to be quoted again:

"To preserve the records and books against insects and to destroy them, it is proposed: 1. to abolish the binding books with any wood; 2. to recommend the bookbinder to use glue mixed with alum in place of paste; 3. to brush all worm-eaten wood in the repositories of books with oil or lac-varnish; 4. to preserve books bound in calf, he recommends to brush them over with thin lac-varnish; 5. no book to lay flat; 6. paper, letters, documents, &c., may be preserved in drawers without any danger, provided the wafers are cut out, and that no paste, &c., is between them; 7. the bookbinder is not to use any woollen cloth, and to wax the thread; 8. to air and dust the books often; 9. to use laths, separated one from the other one inch, in place of shelves; 10. to brush over the insides of book-cases and the laths with lac-varnish."

Various species of insect attack books, and their activities may show as injury to wood, leather, parchment or cloth bindings, to paper or to paste, and almost any part of a book is liable to be damaged. The injury may vary from slight feeding marks on the sides, pages or backstrip to more or less complete riddling of the covers and leaves, resulting in the book's almost falling apart when it is opened. Some infestations may be so severe that the shelves on which the books are standing become covered with excrementitious frass, and dust. In severe cases of termite injury, almost everything is destroyed. Books remaining in piles or on stacks for long periods of time, without inspection, are particularly subject to injury.

Certain conditions favor the multiplication of various species of insect. Many flourish in the presence of excess moisture, of darkness, etc. Many of these adverse conditions have disappeared within recent years, and more and more attention is being paid to light, cleanliness, ventilation, temperature, etc., of places in which books are kept.

However, if certain species of insect gain access to libraries, they may flourish in spite of cleanliness, and ideal temperature and moisture conditions for the books, because after all paper, leather, wood, parchment, etc., are their natural foods and while the food supply lasts, so does the species.

The present account deals with the more important and commoner species of insect that are found in libraries at various times, together with suggestions for their control. It was thought best to treat each species by itself, rather than to set up any classification of the insects based on their preference for some particular part of a book. The latter procedure, if followed, might have been of more interest to entomologists, but it would only be confusing to others and in addition sufficient information for such a classification is not available, and numerous exceptions would have to be noted, which would add to the confusion.

THE BOOK LOUSE

(*Troctes divinatoria* Mull., et al)

Old damp, musty volumes when opened frequently disclose the presence of pale, almost colorless, wingless, louse-like insects, each less than 1 mm. long, moving rapidly over the pages. This species belongs to the family *Psocidae* which includes a number of species that live in houses, and out of doors on the bark of trees and on the walls of buildings. Many of the out-of-door ones have wings. All psocids are biting insects and have well developed mouth parts. The species found in houses are soft-bodied, wingless creatures representing a low form of insect life. Their food consists of animal or vegetable matter, including the starchy paste used in book bindings, wall paper, photographs, etc. They also feed on flour meal and similar substances and sometimes multiply enormously in old straw mattresses.

Ordinarily book lice are not regarded as injurious and it is only when they occur in large numbers that they are noticed. They thrive best in undisturbed rooms that are warm and damp and are seldom found in light, well-ventilated places, or in books that are in constant use.

There have been almost no life history studies of the book louse, but recently Mr. O. W. Rosewall of the Louisiana State University, found after observation that the microscopic, white, oval-shaped eggs are placed among food particles and are difficult to find. The average incubation period is 6.9 days and the nymphs hatching from the eggs require a period of about 30 days in which to mature, during which time they moult three times. The average number of eggs deposited was 57, although one female that lived from June 27 to October 27, laid a total of 98 eggs. Mr. Rosewall's average figures as given are for the period June to August inclusive with a temperature ranging from 60° to 95° F. The average life cycle of the book louse during this period ranged from 24 to 38 days. During cold weather it requires a much longer time to complete its development, sometimes as many as 130 days.

Book lice are usually of such little importance in relation to books that it hardly seems necessary to be specific regarding their control. If old straw mattresses are furnishing a supply, such objects should be burned. If only a few book lice are present, a thorough cleaning, airing and drying of the room is all that is necessary. Light, dry, well-ventilated places, in daily use, are seldom infested. Dry, still heat at 140° F. for three or four hours will eradicate them, as they are soft-bodied insects that cannot exist under such conditions.

THE SILVER-FISH

(*Lepisma saccharina* Linn., et al)

The silver-fish, or fish-moth, or silver-moth, or sugar-fish, or bristle-tail, or slicker, as it is variously known, is one of our most primitive insects, and it feeds on either animal or vegetable matter including starch, glue, the surface of heavy, sized, or glazed paper, paste, and many things not ordinarily found in libraries. Books stored in damp, dark places for long periods are liable to injury from such species. Their food preference appears to be that on which they were brought up. If they started out as glue eaters, that habit seems to persist, and colonies brought up on starch prefer to continue on such a diet. Sometimes gold lettering is destroyed so that the insects may eat the paste or glue beneath. There are several species of silver-fish, one being a heat-loving species, found around bake-ovens and fireplaces and known as the firebrat. This is differentiated from the common silver-fish by the dusky markings on its back.

The silver-fish is a slender, glistening, silver or pearl-gray insect about $\frac{1}{3}$ of an inch in length, bearing three long tail-like appendages. It shuns the light, runs rapidly, and develops in numbers during warm weather. It is seldom found in dry, light, well-ventilated places and rarely injures books in frequent use.

According to E. A. Back, from none too numerous observations, it appears that, in a temperate climate, females deposit from 6 to 10 eggs each in late spring. These small, whitish eggs are deposited in crevices and other concealed places and with a temperature in the neighborhood of 66° F. may not hatch until from 46 to 60 days after being laid. In tropical climates, however, they hatch in from 6 to 10 days. In temperate climates about 2 years is required for them to reach maturity, but this is reduced in tropical climates to from 7 to 9 months. Adults have been kept alive without food for as long as over 300 days. Apparently they develop slowly, have very few young, and are able to survive in the absence of food, for long periods of time.

Unless silver-fish are numerous, it is hardly necessary to adopt control measures. Ordinary house-cleaning will keep their numbers down. However, they may be poisoned by using a powder consisting of a mixture of 12 parts of sodium fluoride to 100 parts of wheat flour. This should be placed where silver-fish are found, such as on shelves, behind books, etc. Sodium fluoride, of course, is poisonous. It is not believed that in books silver-fish are ordinarily likely to become so numerous as to require fumigation.

Fresh pyrethrum is sometimes dusted over and through articles infested by silver-fish, but it loses its insecticidal value when exposed to air and must be replaced at short intervals, and in addition, care must be used so as to avoid staining fabrics or woodwork.

COCKROACHES

Cockroaches are likely to be found wherever there is a plentiful supply of food in connection with warmth and moisture. Among the first forms of insect life to appear during the Silurian age, their general characteristics and forms have changed only slightly. Several species inhabit buildings, the three most common being the German cockroach or Croton bug (*Blatta germanica*), the Oriental cockroach (*Blatta orientalis*), and the American roach (*Periplaneta americana*). The first or Croton-bug is small, pale brown in color and has two dark stripes on its thorax. The Oriental cockroach is dark brown or black with wings shorter than its body, the wings of the female being reduced to short flaps. The American roach is a large one, with long, reddish-brown wings, and a paler thorax marked with a diffused, central dark blotch.

All roaches have flattened, horny bodies, large spiny legs and are thus equipped to invade cracks and crevices and to move rapidly. They are omnivorous and do most of their prowling and damage at night. Various instances of their damage to books are on record. They feed, among other things, on leather and parchment bindings. They like binding paste, and in getting at it they deface cloth and other book coverings. Altogether they are undesirable inhabitants to have in a library.

Each female cockroach lays several batches of eggs, each batch being enclosed in a brown, elongated bean-shaped pod or capsule, or in a purse-shaped capsule, depending upon the species of cockroach. These egg capsules are carried about by the females for several days before being deposited in some warm, moist place where the young roaches will find conditions suitable for their development. The number of eggs in a capsule varies with the species.

The young wingless roaches are flat, and in the course of their growth, shed their skins five times. Under normal conditions the majority of species requires about a year for complete development. They breed continuously in heated places, and all stages of growth may be found most of the time.

Because, according to their own standards, roaches are always grooming themselves and combing their antennae or legs, with their mouthparts, and because they are always, in their leisure time, scraping off and removing all foreign substances adhering to their bodies, advantage may be taken of such actions in poisoning them.

Sodium fluoride when scattered about in their runways is usually sure death to roaches when they come into contact with it. The poison adheres to their legs and antennae and finally reaches their mouths. The sodium fluoride should be dusted lightly in places frequented by the roaches. This material retains its effectiveness and may be left undisturbed as long as convenient, or until the insects have disappeared. As this chemical is also poisonous to man and other animals, reasonable precautions should be taken. Powdered borax may be used the same way, but it works much more slowly than sodium fluoride. Other roach remedies involving the use of pyrethrum, poisoned baits, and fumigation with hydrocyanic acid gas, while effective in certain situations, do not appear to be so adapted for use in libraries as sodium fluoride.

THE DRUGSTORE BEETLE

(*Sitodrepa panicea* L.)

In addition to being a real book-worm and deserving of the name, this cosmopolitan species feeds upon some forty-five different drugs, leather, dried beans, peas, breakfast foods, chocolate, syrups, flour, etc., etc. For many years it has been known by entomologists to attack books, and there is a note on record of its having been bred in large numbers from the covers of an old copy of Dante's *Divine Comedy*. Titles, however, mean nothing to the drugstore beetle, and I have seen everything from cheap novels to rare manuscripts showing the effects of its feeding, and the injury varying from a few circular holes in a few pages to numerous circular holes and longitudinal channels throughout the covers and pages and the injury so pronounced that the books really fell apart when they were handled.

The drugstore beetle is cylindrical in form, about $\frac{1}{10}$ of an inch in length and of a uniform light brown color, with fine, silky pubescence. The antennae or feelers, each terminate in an elongate three-jointed club. When at rest the head of the beetle is retracted into a hood-like thorax and the legs and antennae are folded and oppressed tightly to the body. The larva is white, cylindrical, and curved, with dark mouth parts. According to Houlbert, eggs are deposited near the surface of the binding or on the edge of the leaves and in the summer they hatch in five or six days. The young grubs penetrate the book and feed on the paper. After becoming full grown and before transforming to pupae the grubs make their way close to the exterior surface. The pupal stage lasts about 15 days after which the adult beetle emerges through the thin film of material which separates it from the outside world and is ready to start feeding and another generation. About two months are needed for a complete life cycle from egg to adult, and four generations a year are not unusual.

The drugstore beetle and its control in the Huntington Library was the subject of an interesting and informative paper by Thomas M. Iiams in the *Library Quarterly* for October, 1932. The infested books were successfully fumigated in a vacuum fumigator designed by the Huntington Library to accommodate six library truck loads of books at a time. The fumigant used was a combination of ethylene oxide (C_2H_4O) and carbon dioxide (CO_2), known commercially as "carboxide." By fumigating in a vacuum, almost perfect penetration was obtained and it was not necessary to open every book. All stages, including the egg, were destroyed. The vacuum treatment ruptures the thin membrane at one end of the egg and allows the poisonous gas to enter.

Although vacuum fumigation is desirable, ordinary fumigation in tight rooms or containers is frequently successful if repeated at intervals so as to kill insects hatching from eggs and pupae that were present during the first fumigation. These stages are difficult to kill.

Various fumigants such as hydrocyanic acid gas, carbon bisulphide, carbon tetrachloride, paradichlorobenzine, carboxide, etc., may be used for varying lengths of time under different atmospheric conditions. For the application of most of these, experienced fumigators should be employed. These men will be familiar with fire hazards, poisonous qualities of the gases, effectiveness, possible damage to objects other than books, preparation of place to be fumigated, ventilation following fumigation, etc.

THE WHITE-MARKED SPIDER BEETLE

(*Ptinus fur* L.)

In 1766 Linnaeus mentioned this species as being very injurious in libraries, and in 1934 it was found together with *Sitodrepa panicea*, in a large library in the eastern part of the United States. It is a cosmopolitan species and is found in storerooms, cellars of houses, museums, warehouses, etc., feeding upon vegetable and animal substances including flour, cotton seed, wool, furs, clothing, roots, dried plants, etc.

The adult is reddish-brown in color, covered with chocolate-colored hairs. The female only is marked on its wing-covers with two patches of white hairs, which tend to run together and form white bands. The female is larger than the male and is about $\frac{1}{8}$ -inch in length. The larva is like that of the drugstore beetle.

So far as its life history, activities, and damage to books are concerned, these are similar to those of the drugstore beetle.

Another closely related species known as the brown spider beetle (*Ptinus brunneus* Duft.) frequently occurs with the white-marked spider beetle and apparently the life histories of both are more or less identical. The brown spider

beetle has been reported from America, Asia, and Europe, and it is said to prefer books bound in leather and sheepskin, its galleries usually being found in the leather over the spine.

For the control of this species the methods recommended for the control of the drugstore beetle should be used.

THE LARDER BEETLE

(*Dermestes lardarius* L.)

This is a small, dark brown beetle with a pale yellowish band across the upper half of its wing covers. This band is marked with six black dots, three on each side. The beetle itself varies from $\frac{1}{4}$ to $\frac{1}{3}$ of an inch in length. The Rev. J. F. X. O'Conor recorded this species as occurring in great numbers among books, doing considerable damage to the covers.

Normally this cosmopolitan beetle feeds on stored provisions, especially on animal matter such as hams, bacon, meats, etc. It also feeds on old cheese, horn, hoofs, feathers, hair, etc. The adults enter houses in May and June and deposit eggs upon their food if it is exposed, and if not, in cracks and crevices of places where food is stored. The larvae are small, brown and hairy, being about $\frac{1}{2}$ inch long when mature. Each larva bears two short, curved, stiff spines on the dorsal surface of the last abdominal segment. A complete generation may require from 40 to 50 days depending upon the temperature. There is no need here to go into methods of control for infested hams and cheese. If the species occurs in libraries in sufficient numbers to make remedial measures worth-while, then fumigation should be resorted to as in case of infestations by the drugstore beetle. One would suppose, from the normal feeding habits of this beetle, that leather bindings would be particularly subject to attack.

Another closely related species, which is also cosmopolitan, and which sometimes damages books, is the leather beetle, or skin beetle, *Dermestes vulpinus* Fab. It is recorded that this species was killed in books by subjecting them to a temperature of 125° F. without injury to the books. Its habits and life history are similar to those of the larder beetle.

THE MEXICAN BOOK BEETLE

(*Catorama Mexicana* Cher.)

This is a dark brown, chunky beetle about $\frac{1}{16}$ of an inch in length, covered with fine silky hairs. Its grub is about the same length, and cream colored with shining head and dark mouth parts, and usually curled, in its hiding place. In 1885 Blackburn reported it as common on Maui in houses and in decaying trees near the sea level. Kotinsky in 1906 reported its occurrence in Hawaii Territory,

where he bred it from books. It also damages leather, and such things as straw in horsecollars. In 1928 Taylor reported what was probably this species as injuring the backs, covers, and pages of a collection of books that had been shipped from Honolulu to Boston in 1927. Old volumes with hand-made paper were badly damaged. Recent books with clay-filled, chemical-laden paper had the injury restricted to the bindings.

Mr. Taylor stated that the larvae fed for seven weeks in Massachusetts at room temperatures. They were also found to be cannibalistic, which might explain the few individuals found, in comparison with the extensive damage.

Another related species, *Catorama herbarium*, deposits eggs on the leaf-edges or bindings. In Brazil they hatch in 5 or 6 days and the larvae first eat the binding paste, then the bindings. Pupation usually occurs in the back bindings. In São Paulo, Brazil, the breeding season of this beetle, which is nocturnal, seems to be from October to December, but all stages may be found during such months.

For the control of these species, fumigation with carbon bisulphide is recommended, at a dosage of 1 lb. to 1,000 cubic feet, for an exposure of 24 hours. Frequent dusting of books and book cases will disturb the beetles and prevent activity.

OTHER BEETLES WHICH ATTACK BOOKS

Certain wood-boring beetles, or so-called powder-post beetles, particularly those of the family *Lyctidae*, may become injurious to the beams and framework of houses, and in addition, to furniture and books. They bore long cylindrical tunnels, producing the "worm-eaten" effect. Sometimes nothing but a shell is left, the interior having been eaten away and reduced to a fine powder.

Anobium hirtum, once a native of southern Europe, but now known from the southern United States, was recorded years ago as damaging books in the State Library at Baton Rouge, and in a library at Grand Coteau, La. Other beetles, particularly of the family *Dermestidae*, such as species of *Anthrenus* and *Attagenus*, have been recorded as injuring books. With several exceptions beetles belonging to the *Dermestidae* feed upon carpets, skins, furs, dried animal and vegetable remains, and are often injurious in the home, warehouse and museum. Their larvae, which are elongate and hairy, may carry a tuft of bristles at the posterior end of the body and sometimes along the sides. The beetles themselves are usually oval, stoutly built and small in size. As a rule they are dark in color, but the surface may be marked with gray or brown spots and sometimes with red, brown, or yellow.

In addition to the species that have been enumerated, the following beetles are on record as injuring books: *Gastrallus lavigatus*. Oliv., and *Niptus hololeucus* Fald., were found associated with *Sitodrepa panicea* in a large, serious

infestation. *Rhizopertha dominicana* which is a museum pest principally has been found injuring the inner portion of the backs of books, causing the bindings to become loose, in the library of the School of Tropical Medicine at San Juan, P. R. *Lasioderma serricorne* Steph., a pest of stored, dried products, sometimes includes books among its diet. *Anobium tessalatum* and *Anobium pertinax*, both related to the drugstore beetle have long been known as enemies of books. In Brazil *Catorama herbarium* and *Dorcatoma bibliophagum brasiliense* sometimes do extensive damage. And in addition, others which are potential destroyers of books might be mentioned.

Measures of control for the above species should take into consideration the degree and type of infestation and the suitability of certain insecticides. Fumigation with Cyanogos A spread on newspapers and sprinkled with water, for an exposure of 36 hours, was successful in one case against *Rhizopertha dominicana*. In other cases fumigation with carbon bisulphide was apparently successful. The average dose for stored products is about one pound to each 100 cubic feet of space for 24 hours. Carbon bisulphide is an inflammable liquid which volatilizes readily upon exposure to air, giving a gas several times heavier than air. Consequently it should be placed in jars *above* the items to be fumigated. When mixed with air in certain proportions, it is highly explosive. Again, the use of hydrocyanic acid gas might be considered. All such fumigants should be used by experienced operators.

THE BROWN HOUSE MOTH

(*Borkhausenia pseudospretella* Stainton)

The brown house moth, a feeder upon animal and vegetable matter, occurs in Western Europe, North America, India, Ceylon, Australia and New Zealand. Sometimes called the False Clothes Moth, it feeds during its larval stage principally upon upholstery, carpets, furs, skins, dried specimens of animals, birds, etc., seeds, dried plants, groceries, figs, dates, etc., and of course sometimes on books.

The adults, which have a wing expanse varying from a little over $\frac{2}{3}$ to $\frac{3}{4}$ of an inch in the male, and from $\frac{3}{4}$ of an inch to 1 inch in the female, may emerge during any month of the year, but is most commonly noted in houses in Great Britain from May to September. The larva, when full grown, is shining, milky white in color, with a dark brown head, and thinly clothed with fine yellowish hairs, the length being $\frac{1}{4}$ to $\frac{3}{4}$ of an inch. The complete life cycle takes from 11 to 13 months.

Relative to its damage to books, Mr. R. N. Chrystal has recorded its damage to books in the University College bookstore, Oxford. These had been stored in

the cellar and the cloth binding of nearly half of 1,600 volumes showed damage. To some of these the damage was extensive. Only in a few instances was there any trace of feeding found in the leaves. The injury was most severe to books on shelves nearest the floor and the injury became less pronounced and disappeared entirely as the distance from the floor became greater. The feeding of the larvae showed as irregular patches of varying depths on the binding with the same type of damage to the insides of the covers. The shelves contained masses of excrement, and traces of threads. Cocoons were found also on the shelves, and caterpillars in irregular tunnels on the outer bindings. Some cocoons were between the covers and the flyleaves.

Another instance of damage to books by this species was made by Robert Adkins, who found it injuring leather binding. Mr. F. H. Haines, another observer, also reported injury to leather bindings and said that dampness appeared to favor the spread of the species. William Blades, in his "Enemies of Books," lists this species under the name *Oecophora pseudospretella*.

Other closely related species of moth, mostly belonging to the family *Tineidae*, which includes feeders upon furs, woolens, feathers, skins, etc., have been recorded as injuring books. Many years ago Professor Westwood mentioned the larvae of *Aglossa pinguinatus*, and *Depressaria* sp., as spinning webs between volumes and using the paper in their cocoons.

For control, fumigation with carbon bisulphide, or hydrocyanic acid gas is recommended, under the precautions previously noted. A mixture of ethylene dichloride, 3 parts, and carbon tetrachloride, 1 part, produces a mixture that vaporizes slowly at ordinary temperatures. The gas is heavier than air, non-explosive and non-inflammable, and in low concentrations not dangerous to humans. At the rate of 14 pounds per 1,000 cubic feet for an exposure of 48 hours at a temperature of 80° F., good results should be obtained. The fumigation, of course, should take place in a sealed room, or container, and the mixture should be placed at the top of the space to be fumigated, and in shallow containers so as to facilitate volatilization.

Paradichlorobenzene may be used also as a fumigant, although it volatilizes much more slowly, and several days or a week might be required for the fumigation, depending upon the temperature.

TERMITES OR WHITE ANTS

(*Reticulitermes flavipes* Kollar, et al.)

Termites in the United States are for the most part insects of wood-boring or subterranean habits and they are not as common as those in the tropics which construct mounds or make nests in trees. For this reason termites here usually

escape notice until they become injurious. Termites are found everywhere except the Arctic and Antarctic circles and our common native species in North America is *Reticulitermes flavipes*. In the United States this species and the southern termite, *Reticulitermes virginicus* Banks, are more injurious in the southern states than elsewhere. These species, building their nests in the ground, in logs, stumps, etc., extend them into standing timber of buildings and other wooden objects, which are in contact with the ground. A colony of termites consists of different forms or castes. In a nest there are produced both winged and wingless mature individuals, the migratory males and females with wings appearing only during a short period once each year. Then there are soft-bodied, grayish-white wingless workers which are the destructive ones, as they extend the nest and make the excavations. In addition, there are soft-bodied wingless "soldiers," with long, sabre-shaped jaws, and the reproductive individuals, which, in some colonies, consist of a single pair, the king and queen. In other colonies many supplementary nymphal forms are present.

The workers, which are the most numerous individuals in a colony, and the soldiers, undergo complete development from the egg in less than a year. The life of a king and queen extends over a period of many years and other forms require two seasons to complete their development. In the south egg laying begins in April and extends until the end of September or October.

The food of termites is in large part cellulose, and this they obtain from living and dead vegetation, from stored books, newspapers, magazines, papers, from articles made of wood pulp, from timbers, flooring and woodwork of buildings, etc. Some of their food consists of molds and other fungi which the termites grow in moistened chambers of their nests. Their feeding is so complete that frequently only an outer shell of the infested article remains.

Termite injury to books is really secondary to their injury to woodwork. Books on wooden shelves, in wooden bookcases, on floors, particularly in damp basements, will be eaten, if termites gain access to them, the insects burrowing through such articles when they are in contact with infested wood.

An indication that termites are present in the building is the emergence of large numbers of flying termites. Numbers of dead winged adults, or their discarded wings are usually found near infested timbers. Killing the winged adults will not stop the damage although it will be beneficial in preventing the establishment of new colonies out-of-doors.

Termite-proofing is the only method of control that is permanent. Foundation timbers should be disconnected from the ground. Wood should be replaced with concrete or metal. Subterranean termites will die if the wood is separated from the ground. Either carbon bisulphide or carbon tetrachloride may be used to kill

termites in the soil if it is moist and not packed too solidly. Although there are numerous records of book destruction in the tropics and in the southern states by termites, such damage is without the realm of possibility in libraries of modern construction in cities, with their concrete or stone structures, metal shelves, etc.

Humboldt accounted for the rarity of old books in New Spain by the injurious work of termites. Unless books are stored in damp wooden basements and neglected for long periods of time, injury by termites is remote. It goes without saying that books, and valuable documents, should not be stored in warm unventilated places where they may become damp and mouldy and attractive to termites.

According to Sir Arthur E. Shipley writing on bookbinding for the tropics, to prevent termite attack, a solution of 1 oz. of corrosive sublimate, 1 oz. of carbolic acid and 2 pints of methylated or white rum spirit may be painted lightly on both outside and inside covers, and along the margin and backs where paste has been used. After drying the books may be handled with perfect safety. This formula or variations of it has been used successfully in Jamaica, Porto Rico, and Cuba, not only as a deterrent to termites, but other insects as well. In some places it is customary to add enough shellac to the mixture so as to produce a slightly adhesive liquid.

OTHER MISCELLANEOUS SPECIES

Ants and crickets sometimes attack books, but such attacks are incidental and scarce. Many years ago ants attacked the unvarnished wood of bookcases in contact with the floor, and incidentally some damage was done to a few books. The infested wood was burned, the cases were raised from the floor, and the trouble ended.

Sometimes arachnids and mites are found in old books, such as the pseudoscorpion *Chelifer cancroides*, and the mite *Chyletus eruditus*. The former is recorded as an enemy of *Troctes divinatoria*, the book louse, and it is frequently found on the legs of flies and other insects, and occurs in herbariums and beehives. *Chyletus eruditus*, although usually carnivorous, feeds upon paste and loosens leaves. Sometimes it is common in the dust of hay, fodder, straw, old meal, flour, etc. Fumigation with carbon bisulphide should be effective in disposing of such creatures.

CONTROL OF BOOK INSECTS IN THE TROPICS

Some of the insects attacking books are cosmopolitan and therefore occur in the tropics as well as in other climatic zones. Others may be species found only in certain zones. However, certain beetles, roaches, silver-fish and white

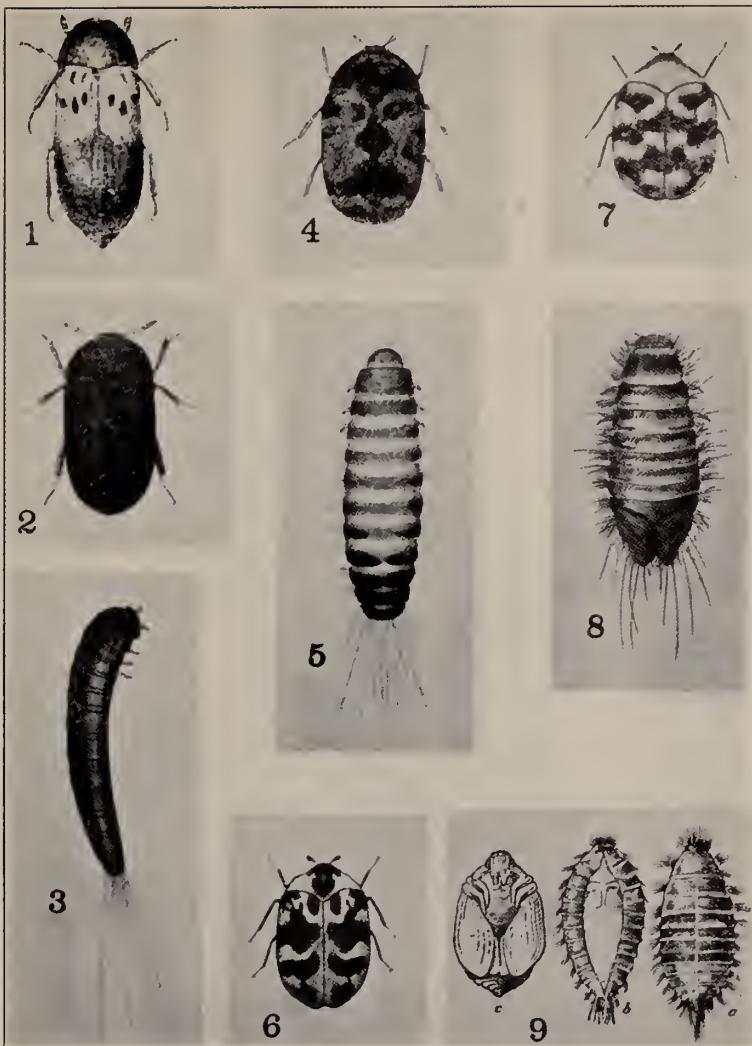


PLATE I

Various beetles of the family *Dermestidae* which have been recorded as injuring books. With several exceptions beetles belonging to this family feed upon carpets, skins, furs, dried animal and vegetable products, and are often troublesome in the household, museum, and warehouse. Their larvae, which are elongate and hairy, may carry a tuft of bristles at the posterior end of the body and sometimes along the sides. The beetles are usually oval, stoutly built and small in size. As a rule they are dark in color, but the surface may be marked with gray or brown spots and sometimes with red, yellow or brown.

1. *Dermestes lardarius* L. (after Felt); 2. *Attagenus piceus* Oliv.; 3. Larva of *A. piceus*; 4. *Trogoderma ornata* Say; 5. Larva of *T. ornata*; 6. *Anthrenus scrophulariae* L.; 7. *Anthrenus verbasci* L.; 8. Larva of *A. verbasci*; (after Mutchler & Weiss); 9. *A. scrophulariae*, c, pupa ventral view; b, pupa within larval skin; a, larva, dorsal view (after Riley).

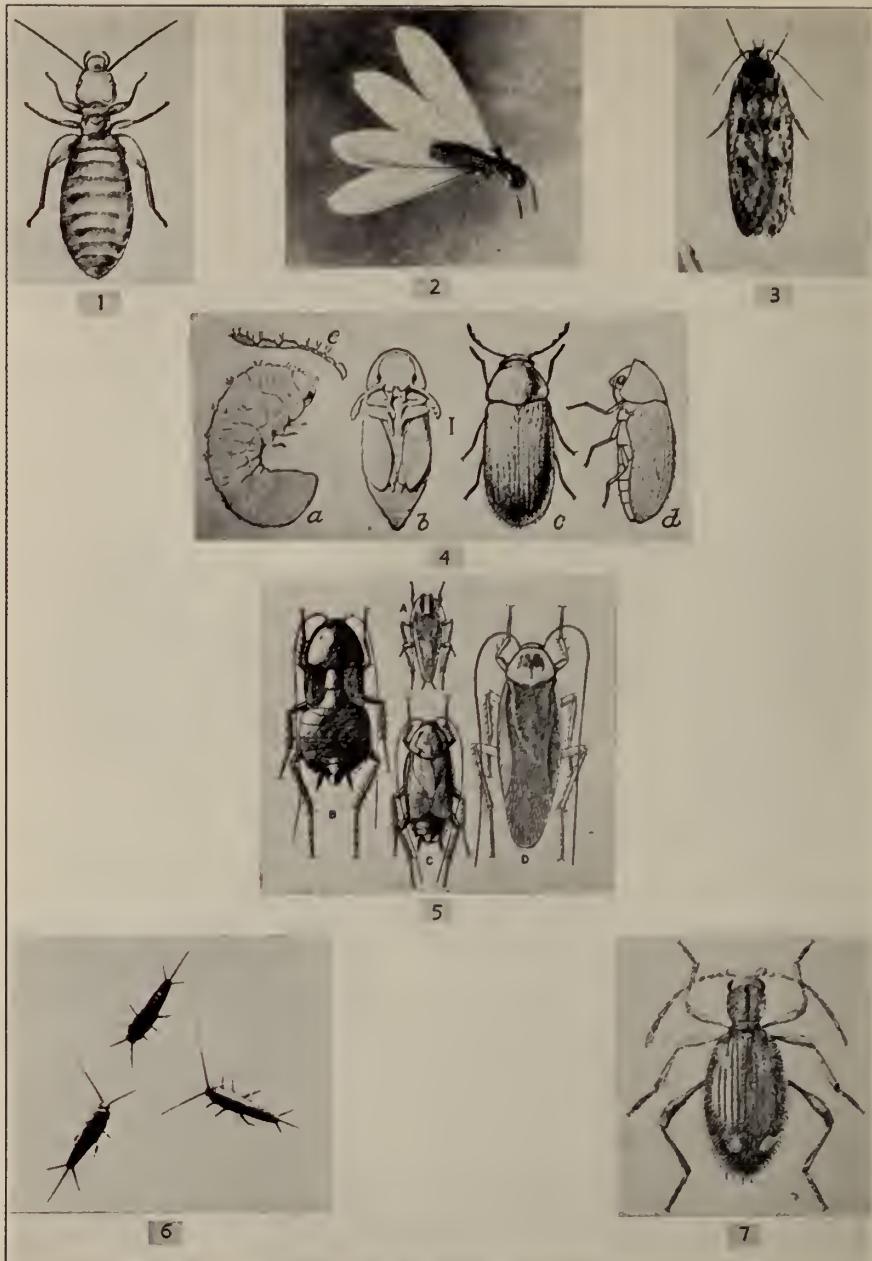


PLATE II

1. Adult book-louse, about 50 times natural size. (After Back, Farmers' Bull. 1104, U. S. Dept. Agric.) ; 2. Adult white ant ; 3. Female of brown house (or false clothes) moth. (After Austen and Hughes, Brit. Mus. [Nat. Hist.] Economic Series, No. 14.) ; 4. *Sitodrepa panicca*: a, larva; b, pupa; c, beetle, dorsal view; d, lateral view. (After Howard & Marlatt, Bull. No. 4, n. s. U. S. Dept. of Agric.) ; 5. A. German cockroach. B. Oriental cockroach, female. C. Oriental cockroach, male. D. American cockroach — all enlarged. (After Fulton, Iowa Agric. Exp. Station Circ. 112) ; 6. Silver-fish, slightly enlarged. (After McDaniel, Mich. Agric. Exp. Sta. Circ. Bull. 101) ; 7. The white marked spider beetle, enlarged. (After Herrick.)

ants, regardless of their exact specific identities are troublesome book pests more or less over the world, occurring more abundantly in some places than in others.

According to the literature on the preservation of books in the tropics, the main methods in effect against insects appear to be fumigation with carbon bisulphide, the incorporation of a poison in the binding paste, and the application of a poisonous solution to the covers and backs. Carbon bisulphide appears to be recommended at the rate of about 1 lb. to every 1,000 cubic feet of space for a period of from 24 to 36 hours, the fumigation taking place in an airtight receptacle, and the books being stood up, slightly opened, so as to allow the gas to penetrate.

When binding paste is poisoned, the method is to dissolve 5 grams of mercuric chloride and 60 drops of wood creosote in two pints of rectified spirits and to this add one ounce of carbolic acid and add to the paste. Mr. Cundall reports the use of this for books bound for the Institute of Jamaica for more than thirty-six years.

To prevent species of insect, particularly roaches, from eating the surfaces of books bound in cloth, varnishing with shellac has been found satisfactory. Gum shellac is dissolved in enough rectified spirits to obtain a thin varnish. Two or three coats are applied with a brush, and the book is spread open to dry. Frequently corrosive sublimate is added and both inside and outside covers are painted, the formula for such a mixture having been given in the present account under "Termites or White Ants."

Regardless of the geographical location of infested books, it would appear that fumigation in a vacuum, provided such facilities are available, is an ideal method for such insects as beetles, moths, silver-fish, book lice and other species that actually inhabit the books. Fumigation of entire rooms or the application of poisoned baits, may be desirable for various species of roach. As a rule fumigation is a clean, satisfactory method of control, whether it be in a vacuum or not, and some of the common fumigants in use are hydrocyanic acid gas, carbon bisulphide, paradichlorobenzine, naphthaline, and a mixture of ethylene oxide and carbon dioxide. Where infestations are chronic, then applications of poisonous solutions to the books themselves may be necessary.

Of course, various factors such as moisture, temperature, light, darkness, composition of paper, bindings, etc., enter into the degree of infestation.

If optimum conditions prevail, and if there is an adequate food supply, the insects will flourish and the damage will be in proportion to the numerical abundance of the species. Although few libraries are in a position to make a "climate" best suited for the preservation of books and although they have no control over the manufacture of books, yet light, temperature and moisture may

in many instances be controlled within certain limits so that conditions unfavorable for insects and other book deteriorating agents may be produced.

In the annotated bibliography that follows, there will be found references to many insects not mentioned in this introductory statement. Some of such insects are only occasionally injurious to books, nevertheless it was our aim to make the bibliography as complete as possible, and it is thought that the annotations will be of interest to those who, unwillingly or not, are brought into contact with insects injurious to books.

HARRY B. WEISS
*Chief, Bureau of Plant Industry,
New Jersey Department of Agriculture*

INSECT ENEMIES OF BOOKS

AN ANNOTATED BIBLIOGRAPHY TO 1935

Compiled by RALPH H. CARRUTHERS and HARRY B. WEISS

TO SAY that this bibliography is exhaustive would be patently an untruth, for the period covered is some 2200 years and the variety of publications in which references have been found is great. Witness the following: books and other publications in the fields of book-collecting, belles-lettres, library science, archival science, bookbinding, paper technology, general science, natural science (particularly entomology), agriculture, medicine and pharmacy, government documents, travel books, reports and transactions of a variety of societies and associations, popular accounts in a variety of periodicals, etc. All that can be said is that we believe the bibliography contains the more important references to the subject. Many references which do not seem important have been included because they have been mentioned by writers on the subject.

The scope of a bibliography may be defined by what it does not include: in this list references in languages other than English, German, French, Italian, Spanish and classical Greek and Latin have for the most part been omitted. There are undoubtedly many references in oriental languages. And no doubt there are other literary or pseudo-scientific references in the Latin of the Middle Ages.

Strictly biological references to species have been omitted. They are well indexed in various scientific bibliographies and current indexes.

Publications of agricultural experiment stations have been omitted except when they have important notices of damage to books or contain control measures of modern importance.

Many references in the older bibliographies have been omitted on account of their age, where control measures are concerned, and where no specific damage to books is mentioned.

A number of references have escaped on account of the inadequate bibliographical information given in the text of several articles.

Newspaper articles have practically all been omitted.

Patent literature has been omitted except for one bibliography and one Japanese reference.

The human species of bookworm has been omitted except for a few classical references.

Encyclopedia articles have been omitted except for some early references that were borrowed from elsewhere; likewise dictionary definitions.

Travel books have not been exhaustively searched. The early references on termite damage to books, most of them in books or other accounts of travel, have been gathered by Hagen in his monograph noted in the bibliography but not brought out separately.

Translations of articles have been given when found but translations of books have not always been noted.

If The New York Public Library does not have the first edition of a work the place and date of the first edition has been noted when it was necessary to place the date, provided that it was certain the first edition contained the material. Sometimes the first edition has been noted as a matter of interest.

Scientific names have been given as found in the author's own spelling and no attempt has been made to change the names to conform to changes in classification.

Concerning the mechanics of the bibliography, the arrangement is by period and alphabetical within the period. Authors and names mentioned in the annotations will be found in a special index at the end of the bibliography. This index does not contain the authors of the main entries.

A * before a name or title of a reference indicates that the book or article in question has not been seen. The source of such references has in nearly all cases been indicated by "cf." or "according to."

A * before a classmark is part of the classmark.

Words in parentheses after a classmark indicate the filing word.

The word "Copy" followed by initials which look like classmarks are library designations, the symbols used being those given by the Union Catalogue in Washington and the *Union List of Serials*. The two lists are based on the same system.

Bibliographies are considered dry reading, if indeed they are read at all. It is hoped that the annotations will prove interesting as some attempt has been made to bring out interesting bits of anecdote and information of a usable nature. However, one of the main purposes of a bibliography is to gather together the work of those who have gone before in order that those living and those who come after may not waste time in covering the same ground. Bookworms have been boring and chewing away at books and records ever since writing materials began to be made of organic substances, and they will continue to do so. But it is hoped that by the spread of scientific information and scientific control methods their damage may be minimized. To this purpose we dedicate the present effort.

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Sixteen bibliographies in books and periodicals including bibliographical articles, and some general articles of no bibliographical significance.
8. DU CANGE, CHARLES DU FRESNE. Glossarium mediae et infimae latinitatis... Parisiis: Didot Fratres, 1840–50. 7 v. 4°.
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An annotated bibliography of eighteen titles, 1724–1876. For further annotations on these articles see his paper "Insect pests in libraries," in the same volume, p. 251–254.
15. HAGEN, HERMANN AUGUST. Monographie der Termiten. (Linnaea entomologica. Zeitschrift hrsg. von dem Entomologischen Vereine in Stettin. Berlin, 1855–60. 8°. Bd. 10, p. 1–144, 270–325; Bd. 12, p. 4–342; Bd. 14, p. 73–128.) QII
A survey of the literature, general and systematic, from the earliest references to the date of writing. Serves as a résumé of the article or book. A monumental work and classic item on termites. There are many references to damage caused to books, leather, and paper and some mention of archives and libraries in the section called *Litteratur. Biologie*.
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- Bd. 12, p. 246, Schouten; p. 247, Caniel; p. 251, Martin; p. 252, Mason; p. 259, Russegger; p. 263,

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Bd. 14, p. 84, L'Herminier; p. 87, Osten-Sacken; p. 91, Barth.

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See p. xxvii-xxxviii for a bibliography of ninety-four items, 1724-1902, with brief annotations. See also the foot-note references to the body of the text.

17. HUCK, THOMAS WILLIAM. *Bookworms. (Notes and queries.* London, 1916. 8°. series 12, v. 1, p. 470.) * R-* DA

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ANCIENT AND CLASSICAL PERIODS

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24. ANTIPHANES OF MACEDONIA. [Epigram on the grammarians.] *Anthologia Palatina*, xi, 322. (In: *The Greek anthology*, with an English translation by W. R. Paton. London: W. Heinemann, 1918. 16°. v. 4, p. 218-220.)

NRGY (*Anthologia Graeca*. Paton. 1916)

Loeb classical library.

Text in Greek and English. The grammarians were sometimes satirically compared to bookworms... "unhappy bookworms that walk on thorns, defilers of the great... bane of poets... away with you, bugs that secretly bite the eloquent." Many of the phrases have been applied to the insect throughout the ages. Antiphanes flourished at the time of Tiberius and Caligula, 1st century A.D.

25. ARISTOTLE. *Historia animalium.* Lib. 4, cap. 7, line 18; Lib. 5, cap. 32, lines 8-10. (In: *Historia animalium*, by D'Arcy Wentworth Thompson. Oxford: The Clarendon Press, 1910. 8°. p. 532a, 557b.) YAEH (Aristotle. Works. English. Smith, 1910)

The works of Aristotle translated into English under the editorship of J. A. Smith and W. D. Ross.

Aristotle found in books a "creature resembling a scorpion" undoubtedly *Chelifer cancroides*, and "also other animalcules... resembling the grubs found in garments." Aristotle worked on his *Historia animalium* during his stay in Athens following the year 335 B.C.

26. ASSUMPTION OF MOSES, 1, 17. (In: *The Apocrypha and Pseudepigraphia of the Old Testament in English...* Edited in conjunction

with many scholars by R. H. Charles... *Oxigrapha*, p. 415.) * P-* PFB (Bible. O. T. Apocrypha. English. 1913)

Original in Semitic written between 7 A.D. and 30 A.D. This translation is from the Latin sixth-century manuscript. Moses addressing Joshua and referring to the books of the Pentateuch gives instructions for their preservation by anointing them with cedar oil and storing in earthen vessels.

27. AUSONIUS. *Lib. 5, Commemoratio professorum Burdigalensis*, 22, Victorio subdoctori sive proscholo. *Lib. 19, Epigrammata Ausonii de diversis rebus*, 1, Προσωποποία in chartam. (In: Ausonius, with an English translation by Hugh G. Evelyn White. London: W. Heinemann, 1919-21. 16°. v. 1, p. 132-133; v. 2, p. 155.) NTSV (Ausonius. English. Evelyn-White)

Loeb classical library.

Text in Latin and English. Ausonius scoffs at the tutor for preferring to bury himself in "worm-eaten and outlandish scrolls" rather than "give himself to more familiar pursuits." In the second reference Ausonius in a long personal address to his paper says that it is for Proculus, to whom he is sending the verses, to decide whether the sheet be preserved with cedar oil or perish as food for the worms. An interesting introductory epigram. Ausonius lived approximately 310-393 or 394 A.D.

28. CAPELLA, MARTIANUS MINEUS FELIX. Martianus Capella, editus curâ L. Walthardi. Bernæ: Ære Wagneri, 1763. 92 p. 16°. NVYB

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Ancient and Classical Periods, continued

F. Eyssenhardt, Lipsia, 1866. See lib. 2, p. 136. Capella is sometimes known as Martianus, and is designated as *Afer Carthaginensis. De nuptiis, etc.*, is the name given to the first two of the nine books of this Latin encyclopedist of the late fourth and early fifth century.

29. EVENUS OF ASCALON. [Epigram on the bookworm.] Anthologia Palatina ix, 251. (In: The Greek anthology, with an English translation by W. R. Paton. London: W. Heinemann, 1917. 16°. v. 3, p. 132-133.)

NRGY (Anthologia Graeca. Paton. 1916)

Loeb classical library.

Text in Greek and English. For Greek and Latin text with notes see *Epigrammatum antologia palatina cum planudeis...metrica versione H. Grotii, et apparatus critico instruxit Frd. Dübner, Parisiis: Didot, 1872*, v. 2, p. 50, and notes, p. 191, NRGZ (*Antologia Graeca. Latin. 1864*). Hugo de Groot omits the metrical version of this particular epigram. In the notes is given the enigma of Symphosius on the bookworm. Did Symphosius get the inspiration from Evenus? Many of the epigrams are like riddles though not this one. English metrical translation in A. C. Benson, *The reed of Pan, English rendering of Greek epigrams and lyrics*, London: John Murray, 1922, p. 2, NRGZ. For another English translation of the epigram, also in rhyme, and a poetic reply (both apparently by the author) see Norman Douglas, *Birds and beasts of the Greek Anthology*, New York: Cape and Smith, 1929, p. 179-180, NRGZ. There are many other translations in English, German, French, etc. There is more than one Evenus represented in the Greek Anthology and consequently the present epigram has been ascribed by some to Evenus, the *Sophist* poet of Paros, fl. 450 B. C. More recent investigation gives the honor to Evenus of Ascalon, the epigrammatist, fl. between 50 B. C. and 50 A. D., as does Paton in the Loeb edition. See also Pauly's *Real-Encyclopädie der klassischen Altertumswissenschaft*, 1909, Bd. 6, col. 976-977.

30. HORACE. Epistularum. lib. 1, 20, line 12, and De arte poetica. line 331-332. (In: Satires, epistles and Ars poetica; with an English translation by H. Rushton Fairclough. London: W. Heinemann, 1929. 16°. p. 389, 479.)

8-NTRH (Horace. Two or more works. English: Latin and English. Fairclough)

Loeb classical library.

In the first reference Horace expresses the fear that his book will eventually become "food for vandal moths." The second refers to the practice of smearing the books with cedar oil and keeping them in boxes or containers made of polished cypress. Horace lived 65-8 B. C. Concerning the use of cedar oil as a preservative and protection from bookworms see the commentaries of Helenius Acron (end of the second century A. D.) and Pomponius Porphyrio (beginning of the third century A. D.). Concerning the use of the containers or scrinium for the same purpose see the commentary of Jodocus Ascensius Badius (1462-1535).

31. ISIDORE, SAINT, OF PELUSIUM. Multorum librorum possessionem utentibus esse utilēm; iis vero qui sola eorum possessione se ditescere putant, extremum supplicium arcessere. (In his: ... Sancti Isidori, Pelusiota, epistolarum libri quinque post Jac. Billii... Parisiis: J. P. Migne, 1860. 4°. lib. 1, epist. 127, Simplicio, p. 267.) ZEL (Migne)

J. P. Migne. *Patrologiae cursus completus. Series Graeca*, v. 78.

Text in Greek and Latin. The title given above is the heading to a short pithy letter on the use of books. Book collecting is a useful thing but Isidore invokes the extreme penalty (bookworms) on those who expect to enrich their minds merely by possessing the books and not using them, for he goes on to say "books

also furnish a home and nourishment to the worms, and are vanquished." For a proverb expressing the idea that books to be saved from the worms must be used see *Erasmus*. See also *Lucian* and *Nodier*. Isidore lived approximately 370-450 A. D.

32. LUCIAN. πρὸ τοῦ ἀταίδευτον καὶ πολλὰ βιβλία ὄνουμενον. [Adversus indoctum or the ignorant book-collector.] (In his: Lucian; with an English translation by A. M. Harmon. London: W. Heinemann, 1921. 16°. v. 3, p. 174-211.)

NSPG (Lucian. Works. English: Greek and English. Harmon. 1913)

Loeb classical library.

Paragraph 1, p. 174 mentions moths, and paragraph 17, p. 194 mentions worms attacking books. The ignorant book-collector unable to make use of his books is merely making a home for bookworms. For a similar idea put in various ways see *Isidore*, *Erasmus*, and *Nodier*. Paragraph 16 mentions the use of saffron and cedar oil on books presumably for the purpose of preservation. Lucian flourished approximately 125-190 A. D.

33. LUCILIUS. [Epigram on Apollophanes.] Anthologia Palatina, xi, 78. (In: The Greek anthology, with an English translation by W. R. Paton. London: W. Heinemann, 1918. 16°. v. 4, p. 110-111.)

NRGY (Anthologia Graeca. Paton. 1916)

Loeb classical library.

Lucilius compares the head of a popular boxer to "a sieve or the lower edge of a worm-eaten book, all exactly like ant-holes, crooked and straight..." Lucilius lived at the time of Nero.

34. MARCELLUS, EMPIRICUS. Marcelli de medicamentis liber, edit Georgius Helmreich. Lipsiae: B. G. Teubneri, 1889. 414 p. 16°. (Bibliotheca scriptorum Graecorum et Romanorum Teubneriana.)

See cap. 12, 36 and cap. 31, 21.

p. 124 and 331, references to the use of cedar oil for preserving books. Marcellus flourished in the latter part of the fourth century. Copies: DLC, ICN, MiU, NNN.

35. MARTIAL. Epigrams; with an English translation by Walter C. A. Ker... London: W. Heinemann, 1919-20. 2 v. 16°. (Loeb classical library.)

8-NVRB (Martial. Epigrams. English. Ker)

Text in Latin and English. In these epigrams written between 84 or 85 and 104 A. D. there are various references to bookworms and preservatives, usually in a satirical or cynical mood: lib. 3, ep. 2, lib. 5, ep. 6, lib. 8, ep. 61, cedar oil; lib. 6, ep. 61, lib. 11, ep. 1, bookworms and moths; lib. 13, ep. 1, the blatta; lib. 14, ep. 37, bookworms and blatta. The latter epigram instead of reading "Selectos nisi..." may sometimes read "Constrictos nisi das mihi libellos, Admittam tineas trucesque blattus," which changes the meaning. See Rouveyre, *Connaissances nécessaires d'un bibliophile*, 1879, v. 1, p. 93, for a description of a painting at Herculaneum showing the details of a protective covering for a "book." A roll thus bound was a "constrictos liber." Rouveyre then quotes the epigram with this variant reading.

MARTIANUS. See CAPELLA, MARTIANUS MINEUS FELIX.

36. OVID. Ovid with an English translation [of] Tristia [and] Ex Ponto, by Arthur Leslie Wheeler. London: W. Heinemann, 1924. 510 p. 16°. (Loeb classical library.)

NTFH (Ovid. Two or more works. English: Latin and English. Wheeler)

Text in Latin and English. *Tristia*, lib. 1, eleg. 1, line 7, and lib. 3, eleg. 1, line 13; references to the

Ancient and Classical Periods, continued

use of cedar oil as a preservative for books. *Ex Ponto*, lib. 1, 1, line 73; Ovid in exile likens the "constant gnawing of sorrow" at his heart to the gnawing of the bookworm, "as the book when laid away is nibbled by the worm's teeth." Ovid, 43 B. C. - 18 A. D.

37. PACIAN, SAINT, BISHOP OF BARCELONA. *Epistulae tres ad Sympronianum novatianum*, 2, 4. (In: J. P. Migne, *Patrologiae cursus completus...* Series prima [Latina]... Parisiis: Excudebat Vryat, 1845. 4°. tomus 13, col. 1051-1082.) ZEL (Migne)

See col. 1060B for passage on the use of cedar oil as a protection against bookworms, which passage occurs in his exhortation to beware of the philosophy of Novatian. English translation appears in *The epistles of S. Cyprian... to which are added the extant works of S. Pacian [tr. by Rev. C. H. Collsins]. With notes and indices*. Oxford: J. H. Parker, 1844, p. 317-384. (Library of the Fathers, v. 3, part 2.) See p. 331.

Pacian flourished in the latter part of the fourth century.

38. PERSIUS. *Satires*, 1, line 42. (In: Juvenal and Persius, with an English translation by G. G. Ramsay. London: W. Heinemann, 1924. 16°. p. 321.) NVPE (Juvenal. Ramsay. 1924)

Loeb classical library.

Text in Latin and English. Reference to the use of cedar oil as a preservative for books. Persius, 34-62 A. D.

39. PHILIPPUS OF THESSALONICA. [Epigrams on the grammarians.] *Anthologia Palatina*, xi, 321 and 347. (In: The Greek anthology, with an English translation by W. R. Paton. London: W. Heinemann, 1918. 16°. v. 4, p. 218-219, 232-233.)

NRGY (Anthologia Graeca. Paton. 1916)

Loeb classical library.

Text in Greek and English.

The grammarians were sometimes satirically compared to bookworms: "Grammarians, ye children of Stygian Momus, ye bookworms feeding on thorns [thorny passages], demon foes of books," etc., etc. Philippus flourished at the time of Trajan, early in the first century A. D.

40. PLINY, THE ELDER. *Historia naturalis*, lib. 11, cap. 41 (35); lib. 13, 27(13); lib. 24, 11. (In his: *Natural history of Pliny...* translated ... by the late John Bostock and H. T. Riley. London: Bohn, 1855-56. 12°. v. 3, p. 41, 191-193; v. 5, p. 8.) PQC

Bohn's classical library.

In the first reference Pliny states that dust is productive of worms in wools and cloths and "these will breed in paper also," a theory of the generation of worms carried down through the centuries to comparatively modern times. In the second reference is the much-quoted story of Cassius Hemina who in his fourth book of annals states that books found in Numa's grave were in an excellent state of preservation after 500 years, due partly to the preservative effect of citrus leaves. The story is discredited by the translators. The last reference concerns "the juices of cedar so remarkably useful for seasoning books." Published 77 A. D. two years before his death. This is the only reference to Hemina or Himina. See Pauly, *Real-Encyclopädie*.

41. SERVIUS, MAURUS. *Mauri Servii Honorati grammatici commentarii...* (In: Virgil. *Aeneidos...* Ex bibliotheca Petri Danielis. Accedit Fabii Planciadis Fugentii liber de continentia Virgiliana, auctior à MSS. Codd. Item Iunii Philargyrii commentariolus in Bucolica & Georgica Virgilii. Cum certissimo ac copiosis-

simo indice. Coloniae Allobrogum: Apud Petruin & Iacobum Chouët, 1620. 732 p. 8°.) NTLD

On p. 474B Servius, commenting on the *Aeneid*, lib. 7, 178, explains that cedar is used to preserve paper. Virgil makes no reference to this use. Servius the grammarian flourished 400 A. D.

42. STATIUS, PUBLIUS PAPINUS. *Silvae*, lib. 4, 9, line 10. (In: Statius, with an English translation by J. H. Mozley. London: W. Heinemann, 1928. 16°. v. 1, p. 262-263.) NTOE

Loeb classical library.

Text in Latin and English. Statius to Plotius Grypus in which he chides him for sending an unworthy present, a book, "moth-eaten and mouldering," like those used for waste paper. Statius flourished in the latter part of the first century.

43. SYMPHOSIUS, CAELIUS FIRMIANUS. ... Caeli Symposii Aenigmata...no. 16. (In: Poetae Latini minores... Parisiis: Nicolaus Eligius Lemaire, 1826. 8°. v. 7, p. 362.) NTC (Bibliotheca)

Bibliotheca classica Latina. v. 140.

A riddle the answer to which is "a bookworm." According to Frederick Tupper (Modern Language Association, *Publications*, Baltimore, 1903, v. 18, p. 249) this riddle occurs in modern English versions in the following three works: *Wit newly revived. Being a book of riddles...* Newcastle [1780?], p. 2 (no copy located); *The royal riddle-book, a new collection of riddles...* Glasgow, 1820, p. 14 (no copy located). This is a chapbook, and there are other editions. The solution of the riddle is given here as "mouse in a study," and *Riddles, charades and conundrums*. London: Printed for Wm. Davis, 1822. Riddle no. 64 (no copy located). The authorship is attributed to Wm. Davis by the English Catalogue, but attributed to "a lady" in an advertisement in the back of Wm. Davis, *Second journey round a bibliomaniac's library*, London: W. Davis, 1825, *GBH.

A direct modern English translation: *Symposius. The hundred riddles of Symposius tr. into English verse with an introduction and notes by Elizabeth Hickman du Bois*. Woodstock, Vermont: The Elm Tree Press, 1912, p. 24-25. *KP (Elm TreC). This has Latin and English verse on opposite pages, and on p. 12 is given a French translation in verse from Prof. Étienne François Corpet's *Énigmes de Symposius*, Paris, 1868. Copies of French book: MH, MdBP.

Dissertation and English translation: Raymond Theodore Ohl, *The enigmas of Symposius. A thesis...* University of Pennsylvania... Philadelphia, 1928, p. 48-49, NRD p.v.31. Latin and English texts on opposite pages with notes and classical references to the word *tinea*, or bookworm. Statement of manuscripts, editions and translations, etc., on p. 5-8. See also p. 13-15 for a discussion of the authorship and the date of *Symposius*. The riddles have been attributed by earlier scholars to Lactantius and were printed under his name in Migne's *Patrologia Latina*. The date of *Symposius* has been variously given as second, third, fourth, and fifth centuries. Modern scholarship favors the late fourth or early fifth century. There is considerable literature on the riddles of *Symposius* which has not been included in this present bibliography. For other bookworm riddles based on *Symposius* see in this present bibliography: *Codex Exoniensis*, for an Anglo-Saxon version; Frederick Tupper, for the Holme riddles; and Jón Arnason, for an Icelandic version.

44. VITRUVIUS POLLIO. *De architectura*, II, IX, 13. (In his: Vitruvius on architecture, edited from the Harleian manuscript 2767 and translated into English by Frank Granger. London: W. Heinemann, 1931. 2 v. 16°. (Loeb classical library.) MQD

Latin and English texts on opposite pages. See v. 1, p. 140-141. States that when books are soaked with cedar oil they escape injury from worms and dry rot. Vitruvius lived in the last half of the first century B. C.

TO THE END OF THE SEVENTEENTH CENTURY

MIDDLE AGES AND RENAISSANCE

45. ALDROVANDUS, ULYSSES. *De animalibus insectis libri septem, cum singulorum iconibus ad viuum expressis...* Cum indice copiosissimo... Bonon: apud I. B. Bellagambam, 1602. 767 p., 22 l. illus. f°. (Opera omnia. v. 4.)

†† PQC

Lib. 4, cap. 9, p. 499–504, *De blattis*. For practically all of his insects Aldrovandus gives comparison, synonyms, genus and description, habits, the moral to be drawn, literary references, uses in medicine, and control measures. Cockroach damage to books, p. 503–504. Lib. 5, cap. 2, p. 534–540, *De cimice*. Records on p. 536H Girolamo Cardano's account of damage to books and paper. Lib. 5, cap. 11, p. 577, Aristotle's book scorpion. See also p. 6H. Lib. 6, cap. 7, p. 698–700, *De tinea*. The word *tinea* is used for both clothes moths and bookworms. Remedies for clothes moths only. This edition is the first.

46. AUNGERVILLE, RICHARD. The philobiblon of Richard de Bury, bishop of Durham, treasurer and chancellor of Edward III. Edited and translated by Ernest C. Thomas... London: Kegan Paul, Trench and Co., 1888. lxxxv, 259 p. 12°.

* GAC

Text in Latin and English. The introduction has a biographical summary and a discussion of the various manuscripts and editions. The work was finished by de Bury in 1345. First printed edition: Cologne, 1473 (see Hain 4151 and Proctor 1094).

For damage by bookworms in monastic libraries see chapter 8, section 120, p. 66–67 and in this edition see also p. 198.

47. BÈZE, THÉODORE DE. *Ad musas, tineæ sacrificium ludicum.* (In his: *Theodori Bezae Vezelii Poemata*. Lugduni Batavorum, 1757. 16°. p. 82–84.)

NKI

First edition: *Poemata...* Lutetiae, 1548. Copy: MA. The poem also appears under his pseudonym Adeodati Sehae in: *Janus Gruterus – Delitiae C. poetarum gallorum hujus superiorisque avii illustrum. Collectore Ranutio Ghero.* [Frankfurt:] J. Rosae, 1609, tomus 3, [part 2], p. 695–696, NKH. French translation in his *Les juvenilia de Théodore de Bèze. Texte latin complet, avec la traduction des épigrammes et des épîtaphes et des recherches sur la querelle des Juvenilia par Alexandre Machard*, Paris: Isidore Liseux, 1879, p. 149–151, Latin; p. 151–153, French, NKI. See Thomas Parnell for a poem based on this famous epigram.

BURY, RICHARD DE, BISHOP OF DURHAM. See AUNGERVILLE, RICHARD.

48. BUSBECQ, OGIER GHISLAIN DE. The life and letters of Ogier Ghiselin de Busbecq, seigneur of Bousbecque...by Charles Thornton Forster and F. H. Daniell. London: C. Kegan Paul & Co., 1881. 2 v. 8°.

GIO

In the fourth Turkish letter dated Frankfort, December 16, 1562, the author tells of the discovery of a manuscript of Dioscorides badly worm-eaten. See v. 1, p. 417–418 and footnote.

For list of editions of the Turkish letters, see v. 2, p. 288–291. First edition with the fourth letter: Paris, 1589. Copy: MH(1589).

49. CARDANO, GIROLAMO. *De sanitate tuenda.* lib. III, cap. xcvi. *De molestia paruorum animalium uitanda.* (In his: *Hieronymi Cardani*

Mediolanensis philosophi ac medici celeberrimi, opera omnia: tam hactenus excusa; hic tamen aucta & emendata; quam nunquam alias visa, ac primum ex auctoris ipsis autographis eruta: cura Caroli Sponii... Lugduni: Ioannis Antonii Huguetan & Marci Antonii Ravaud, 1663. f°. tomus 6, p. 238–240.)

†† OAD

Includes reference to bookworms (*cimex* in this case) which "daily eat away at the books and make fragments of documents." Remedies indicated. This work appeared separately four years after Cardano died under the title *Opus novum, cunctis de sanitate tuenda... digestum a Rodulpho Sylvestrio*. Romae: F. Zanettum, 1580.

50. CODEX EXONIENSIS. A collection of Anglo-Saxon poetry from a manuscript in the library of the dean and chapter of Exeter with an English translation...by Benjamin Thorpe... London: Society of Antiquaries of London, 1842. 546 p. 8°.

NEH (Exeter Book)

See p. 432, riddle no. XLVIII on the bookworm. Anglo-Saxon and English texts in parallel columns. Some editors call this riddle no. XLVII and it is so designated in *The Exeter book of old English poetry with introductory chapters* by R. W. Chambers, Max Förster and Robin Flower, London, 1933, NEH, which see for photo-facsimile (complete) and record of editions, history, etc. According to Flower the manuscript was probably written between 970 and 990 in a monastery in the West Country, England, though the actual dates of composition of the poems are probably much earlier. The riddles have been attributed to Cynewulf by some editors. According to various authorities, notably Franz Dietrich in his "Die Rätsel des Exeterbuchs," *Zeitschrift für deutsches Altertum*, Leipzig, 1859, Bd. 11, p. 451 and 471, this riddle is a free translation of Symposius' enigma no. 16. See Symposius. There is much other literature on the subject.

51. DU TERTRE, JEAN BAPTISTE. *Histoire générale des îles de Saint Christophe, de la Guadeloupe, de la Martinique et autres dans l'Amérique.* Paris: Jacques Langlois et Emmanuel Langlois, 1654. 481 p. 8°.

Reserve

Records damage to books by "des ravets" or cockroaches, p. 389.

52. ERASMUS, DESIDERIUS. *Adagia.* (In his: *Opera omnia emendatoria et auctiora, ad optimas editiones praecipue quas ipse Erasmus postremo curavit summa fide exacta, doctrinique virorum notis illustrata...* Lugduni Batavorum: Petri van der AA, 1703. f°. tomus 2.)

First edition very rare: *Desyderii Herasmi Roterdami veterum aximique insignium paracmariu id est adagiorum collectanea, Parrhisiis:* Jahane Philippo, 1500. (For transcript of title-page and colophon see Philobiblon Society, *Bibliographical and historical miscellanies*, v. 1, no. 17, by William Stirling.) See col. 661, *Adagiorum*, Chiladiis II, Centura VIII, Proverb xcvi, *Tinea pascere*, etc. Moths feed on clothes and books that are neglected. To preserve them, use them. For a similar idea to the above paraphrase of Erasmus' proverb see Lucian, Isidore, and Nodier.

See also col. 982, *Adagiorum*, Chiladiis IV, Centura I, Proverb liv, *Digna cedro*, etc., which explains the passages of Horace, Persius, Pliny, Martial, and others on the use of cedar oil for the preservation of books deemed worthy of saving for posterity.

To End of Seventeenth Century, continued

53. HASKINS, CHARLES HOMER. Studies in mediaeval culture. Oxford: Clarendon Press, 1929. 295 p. 8°. BAP

See p. 65. One of a number of references to book-worms which undoubtedly abound in mediaeval manuscripts. The word was well-enough known to be used as an illustration in a sermon. Speaking of books the preacher said: "What knowledge is this which thieves may steal, mice and moths eat up, fire or water destroy?" Latin original also given. French translation of the passage will be found in *Histoire littéraire de la France*, Paris, 1834, tome 26, p. 465, † NKB.

54. HOOKE, ROBERT. Of the small silver-colour'd book-worm, illus. (In his: Micrographia; or, Some physiological descriptions of minute bodies made by magnifying glasses... London: J. Martyn & J. Allestry, 1665. 4°. p. 208-210, and scheme xxxiii, fig. 3.) † OC

Description of the insect later identified as the silverfish or *Lepisma*, and an account of the damage to books caused by this insect which he calls "one of the teeth of time." The illustration is famous and has been reproduced many times.

55. HUILLARD-BREHOLLES, JEAN LOUIS ALPHONSE. Historia diplomatica Friderici secundi, sive constitutiones, mandata, instrumenta quae supersunt istius imperatoris et filiorum ejus... Parisiis: Excudebant Plon Fratres, 1852-61. 6 v. in 12. 4°. EBD

See the introductory volume (v. 1.), p. lxxix-lxxxiv for a discussion of the use of cotton paper for recording the acts of the emperor and the change to parchment in order to defeat the ravages of moisture and worms.

See v. 2, part 2, p. 91-92, note 5, for the 1221 act regarding the transcription of the laws on parchment. Full text not given. See v. 4, part 1, p. 56-57 for the 1231 act regarding the use of parchment for preservation (*Constitutiones Regni Siciliae*, Lib. 1, Titulus lxxx).

56. MENTZEL, CHRISTIAN. De blatta glorianti & noctius quibusdam insectis. illus. (Academia imperialis Leopoldina naturae curiosorum. Miscellanea curiosa sive ephemeredium medicophysicarum Germanicarum curiosarum... Anni 1687. Norimberga [etc.], 1688. 8°. Decuriae 2, annus 6, p. 125-127; observatio 1, fig. 35.) 3-* EE (Leopoldinisch-Carolinische)

Also in French: Sur l'espèce de mite dont le cri imite celui de la poule et qui ronge les livres; et sur quelques insectes de nuit. illus. (Collection académique composée des mémoires, actes ou journaux des plus célèbres académies et sociétés littéraires étrangères... traduits en françois... [par Daubenton le jeune]... Dijon [etc.]: François Desvertes, 1757. tome 4 de la partie étrangère, et le 1^{er} volume de l'histoire naturelle séparée, p. 141, observ. 50, fig. vi, pl. v.) OAD (Bcrryat).

This is the bookworm that is supposed to "crow like a cock" (Lang in his *The Library*, London, 1881, p. 39) but more properly "cluck like a hen." The insect would seem to be one of the death watches, since Mentzelius found it in the boards of a book bound in wooden covers. The illustration is of the winged adult.

57. MOUFET, THOMAS. Insectorum sive minorum animalium theatrum olim ab Edoardo Wottono, Conrado Gesnero, Thomaque Pennio inchoatum: tandem Tho. Moufeti Londinatis operâ sumptibusq; maximus concinnatum auctum, perfectum: et ad vivum expressis iconibus supra quingentis illustratum. [Edited by T. de Mayerne-Turquet.] Londini: Officinā typographicā Thom. Cotes, 1634. 326 p. illus. f°.

Reserve

For copies see Pollard and Redgrave no. 17993.
English translation in Edward Topsell, *The history*

of four-footed beasts and serpents... collected out of the writings of Conradus Gesner and other authors... Whereunto is now added, *The Theatre of Insects, or lesser living creatures...* by T. Muffet. The whole revised, corrected and enlarged with the addition of two useful physical tables by I[ohn] R[owland] M.D. London: Printed by E. Cotes for G. Sawbridge [etc.], 1658. 2 v. in 1. illus. f°. Reserve Room. Other copies: DLC, MB, CSnH, MnU. An interesting work begun by Edward Wotton who died in 1551, after which the manuscript passed through many hands with additions and corrections until it was finally published in 1634. See the chapters *De Blattis*, Moufet, p. 137-141, and Topsell, p. 997-1000. "The Blatta also is a little worm eating cloathes and books," and another reference to the "library or book moth." See also the chapters *De Tinaea vestivora*, Moufet, p. 273-275, and Topsell, p. 1100-1101, wherein it is stated that Augustinus Niphus (probably in one of his commentaries on Aristotle's *Historia animalium*) erred in identifying *tinea* with the scorpion found in books. Reference is also made here to the story of the books preserved with cedar oil which were found in Numa's grave (see Pliny for citrus leave version).

58. NAUDÉ, GABRIEL. Advis pour dresser une bibliothéque... Seconde édition reueue [sic] corrigée & augmentée. Paris: R. le Duc, 1644. 164 p. 16°. * HB

With this is bound Louis Jacob's *Traité des plus belles bibliothèques*. The first edition of Naudé is Paris: F. Targa, 1627. Copy: DLC. There are also later editions. The 1644 edition was translated into English as *Instructions concerning the erection of a library, interpreted by John Evelyn*, London, 1661. Copy: DLC. This translation was reprinted, Cambridge: Printed for Houghton, Mifflin & Co., at the Riverside Press, 1903. 160 p. 8°. * KP (Rogers).

See chap. 6, p. 125-126 in the 1644 ed. and p. 120-121 in the 1903 ed. Naudé advises that the principal openings (windows, etc.) be so arranged that they do not face south in order that the heat and the humidity would not be so excessive as to "nourish the worms and engender vermin."

59. PETIT, PIERRE. In Blattam, insecti genus libris infestum... (In his: Petri Petite... se-lectorum poematum libri duo... Parisiis: Excedebat Joannes Cusson, 1683. 12°. p. 41-42.)

Thirty-four-line poem beginning with the oft-quoted words "Invisum Musis pecus, audax bestia, pestis Chartarum..." Copy: NNC.

SEBAE, ADEONATI, PSEUD. See BÈZE, THÉODORE DE.

60. TUPPER, FREDERICK. The Holme riddles. Ms. Harl. 1960. (Modern Language Association of America. Publications. Baltimore, 1903. 8°. v. 18 [new series, v. 11], p. 211-272.) RAA

See p. 221 and the notes, p. 249, for riddle no. 13, on the bookworm. The riddle is ascribed to the Holme family, England, in the middle of the seventeenth century. Compare a similar riddle by Symphosius and another in the *Codex Exonensis*.

61. WICHNER, P. JAKOB. Kloster Admont und seine Beziehungen zur Wissenschaft und zum Unterricht. Nach archivalischen Quellen. [Mit Unterstützung der hohen k. k. Universitäts-Buchdruckerei, Styria.] [Graz:] Im Selbstverlag des Verfassers, 1892. 216 p. 8°.

Bitumen and absinthe versus bookworms.

See p. 49 for a note concerning Codex 532 of this Benedictine monastery. This thirteenth-century manuscript was based upon a communication from the librarian of the Carthusian monastery at Gaming. Codex 532 is entitled "Remedium contra vermes librorum..." and the Gaming communication, "Remedium expiratum in nostris libris antiquis a vermis corrosis et in ossificis exortis..." In this respect see also Oesterreichischer Verein für Bibliothekswesen, *Mitteilungen*, Wien, 1904, Jahrg. 8, p. 151. Copy of Wichner in NNC.

EIGHTEENTH CENTURY

62. * ANWEISUNG zur Buchbinderkunst, darinnen alle Handarbeiten mit gehörigen Kupfern. Leipzig: Joh. Sam. Heinsii Erben, 1762. 2 Theile. 8°.

cf. Johann Georg Krünitz, *Oekonomische Encyklopädie*, Berlin, 1784, Theil 7, p. 328. Recommends the use of red myrrh in the binding and in the sizing on p. 13. Copy: CSmH.

63. * APIN, SIEGMUND JACOB. Anleitung wie man die Bildnüsse berühmter und gelehrter Männer mit Nutzen Sammeln und den dagegen gemachten Einwendungen gründlich soll... Nürnberg, 1728. 192 p. 8°.

No copy located. Above title from the British Museum Catalogue, new edition. Georgi lists another edition: Anleitung wie man die Bildnisse gelehrter Leuten sammeln soll. Nürnberg: Felsbeck, 1737. 8°. Zincke's *Leipziger Sammlungen*, Leipzig, 1745, Bd. 1, p. 482 gives the title: Vorschlag die Bildnisse gelehrter Männer, and states that on p. 35 Apin gives such remedies for bookworms as copper (sulphate?), pepper, myrrh, colocynth, buck-bean (*Menyanthes trifoliata*), centaury (*Erythraea centaurium*), and lavender. Author's name also given as Apius and Apinus.

64. ARTHAUD, CHARLES. Discours prononcé à l'ouverture de la première séance publique du Cercle des Philadelphes, tenue au Cap François le 11 mai 1785, avec une description de la ville du Cap pour servir à l'histoire des maladies que l'on y observe dans les différents constitutions. Paris, 1785. 55 p. 8°.

It was at this meeting that a prize of "25 portugaises" (1650 livres argent de la colonie de Saint Domingue) was offered for the best paper, to be submitted before the first of May, 1787, on the method of manufacturing paper and book-binding material which would be resistant to the attacks of insects. The prize was given under the benefice of François de Neufchateau, procureur-général au Conseil Supérieur du Cap. Copies: DSG, PPAP. There is also a separate announcement of this prize: Cercle des Philadelphes. Programme de prix proposés par le Cercle des Philadelphes. Son assemblée publique du 11 mai 1785. Copy: PPAP. Also a further announcement: Cercle des Philadelphes. Prospectus. Programme des prix proposés par le Cercle des Philadelphes, établi au Cap-François, à son assemblée publique du 20 juin 1786. Cap Français, 1786. 12 p. 4°. Copy: PPAP. For the results of the prize see the next item. Artaud was founder and first president of the Cercle des Philadelphes.

65. ARTHAUD, CHARLES. Dissertation sur le papier, dans laquelle on a rassemblé tous les essais qui ont été examinés par le Cercle des Philadelphes sur le moyen de préserver le papier de la piqûre des insectes... [avec] notice sur la ville du Port-au-Prince. Port-au-Prince: Mozart, 1788. 24, 8 p. 8°.

The eight pages describe the city of Port-au-Prince. The contents of the papers were also printed separately: Cercle des Philadelphes. Notice sur la séance publique du Cercle des Philadelphes, tenue le 15 août 1788. 1788. 8 p. 4°. Copy: PPAP. A summary of the results appears also in Mathias Koops, *Historical account of the substances which have been used to describe events, and to convey ideas, from the earliest date to the invention of paper*. London: Jaques and Co., 1801. 2. ed., p. 84-89. * KF.

Copies of Artaud: MWA, PPAP.

The dissertation begins with a brief history of paper, probably the inspiration of Koops' historical account. Sieur Briote submitted a sample of paper impregnated with alum and other salts but it was rejected on account

of the contraction caused in the paper. Other samples were rejected on account of the dangerous character of the poisons included, such as arsenic and corrosive sublimate. Only one sample of paper received honorable mention, that of Sieur de Reveillon. None of the methods suggested were sufficient nor were any of the samples submitted entirely insect proof. The prize remained open. Artaud mentions a number of insects injurious to paper and books in the colony: *Lepisma*, cockroaches, termites, a species of *Staphylinus* (described), and *Dermestes scutellatus*, the most common and most injurious. The Cercle itself conducted some experiments. In one instance papers, insects and all were sealed in a lead box with camphor and other supposed deterrents. The insects thrived and multiplied.

66. BERGIUS, PETER JONAS. Annmärkningar öfver herbarier och deras skadande af insekter. (Kongliga Vetenskaps Akademien. Nya handlingar. Stockholm, 1786. 12°. tomus 7, p. 302-309.)

* EI (Kongliga)

Same in German edition: Der Königl. schwedische Akademie der Wissenschaften, *Neue Abhandlungen aus der Naturlehre, Haushaltungskunst und Mechanik*, Leipzig, 1787, tome 7, p. 267-273. Records the damage to herbariums and libraries by *Dermestes mollis*, *Termes pulsatorius* and *Ptinus fur*. Remedies suggested include camphor and cajeput oil, the latter obtained from the leaves of *Melaleuca leucadendron* which grows in the Indian Archipelago.

67. [BOOK WORMS.] (Gentleman's magazine. London, 1792. 8°. v. 62 [incorrectly called 72], part 1, p. 508.)

* DA

Called v. 71 in the NN set.

An anonymous letter on the ineffectuality of Russia leather. Reprinted in Gomme, which see.

68. * BUC'HOZ, PIERRE JOSEPH. Histoire des insectes nuisibles à l'homme, aux bestiaux, à l'agriculture et au jardinage, avec les moyens qu'on peut employer pour les détruire ou s'en garantir, ou remédier aux maux qu'ils ont pu occasionner. Paris: Laporte, 1781. 342 p. 12°.

This work was published anonymously. German translation: Johann August Ephraim Goeze, *Geschichte einiger der Menschen, Thieren, Oekonomie und Gaertnery schädlichen Insecten, nebst den besten mitteln gegen dieselben, aus dem Französischen und mit Anmerkungen*. Leipzig: Wiedmann, 1787. 30, 264 p. Register 24 p. 8°. Copy: MH (Goeze). In the French edition Hagen's bibliography states that on p. 218-219 "are given some odd notices about mites eating books." Copies of the French edition have not been located.

69. CATESBY, MARK. The cockroach. illus. (In his: The natural history of Carolina, Florida and the Bahama Islands... London: C. Marsh [etc.], 1754. f°. v. 2, appendix, p. 10, pl. 10, fig. 5.)

**** KF

Title also in French.

See Sabin 11508 for account of first edition, 1731-48, and German translation. An interesting early reference to *Blatta americana* and its ravages, including damage to paper.

70. * DRESSDNISCHE gelehrte Anzeigen. Dresden, 1758. 12°. p. 285, 417; 1762, p. 7, and Stuck 6, 8, 23 and 33.

According to Hagen's bibliography this contains "remedies proposed against insects which destroy books," which reference he copied from Georg Boeber's *Bibliotheca scriptorum historiae naturalis*, Lipsiae, 1786, pars 2, v. 2, p. 183.

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71. DRURY, DRU. [Cockroaches.] (In his: Illustrations of exotic entomology... a new edition brought down to the present state of the science... by J. O. Westwood. London: Bohn, 1837. 4°. v. 2, p. 70-71.) † QIL

Extract from the preface of v. 3 of the first edition, London, 1782. No copy located.

Concerning the voracious cockroach which eats "leather, books, paper," etc., and in the West Indies even attacks the extremities of the sick and the dead (human beings).

72. DUCHESNE, HENRI GABRIEL. Livres: méthode pour garantir les livres de l'attaque des insectes: moyen très simple pour préserver les livres de la piqûre des vers. (In his: Dictionnaire de l'industrie, ou collection raisonnée des procédés utiles dans les sciences et dans les arts... par D*****. 3e édition... Paris: Poignée [etc.], An IX [1801]. 8°. tome 4, p. 82-83, 84-85.) 3-VB

First edition, Paris: Lacombe, 1776. 3 v. 8°. Refers to *Ptinus fur* and *Ptinus mollis*, and gives various remedies including Prediger's.

73. E PARVIS SAEPE INGENS NOXA. [device.] Abhandlungen von den, den Urkunden und Buechern in Archiven und Bibliotheken schaedlichen Insekten. Eine Preisschrift, die bey der koeniglichen Societaet der Wissenschaften zu Goettingen das Accessit erhalten hat. (Hannoverisches Magazin. Hannover, 1775. 12°. Jahrg. 13, Stuck 12, 13, 14, Feb. 10, 13, 17, col. 177-211.) * DF

The chief enemies of books described by this anonymous author were *Dermestes paniceum* and *Ptinus fur*; other insects noted were: *Dermestes lardarius*, *Dermestes pellio*, *Termites pulsatorium*, and *Phalangium cencroides*. Control measures included the discontinuance of the use of paste, pigskin and wood boards for binding; recommended the use of lime and painting with a solution of arsenic and sublimate. For the prize which occasioned this paper see the entry under Oekonomische Preisfragen. For summaries and reviews see entry under Hermann and others.

— See also HERMANN, JOHANN, AND OTHERS.

EW., JOINT AUTHOR. See ZINCKE, GEORG HEINRICH, AND EW.

74. FLADD, JOHANN DANIEL. Von den, den Urkunden und Buechern in Archiven und Bibliotheken schaedlichen Insekten. Eine Abhandlung des Herrn Administrationsrath Fladd in Heidelberg, die bey der Koenigl. Societaet der Wissenschaften zu Goettingen im vorigen Jahre das Accessit erhalten hat. (Hannoverisches Magazin. Hannover, 1775. 12°. Jahrg. 13, Stuck 28, 29, April 7, 10, col. 433-462.) * DF

Additional material by Fladd in *Göttingische Anzeigen von gelehrten Sachen*, Göttingen, 1776, Bd. 2, Stuck 100, p. 849-851. * DF. Same additions reprinted in "Anhang von den Bückerinsekten," *Berlinische Sammlungen zur Beförderung der Arzneywissenschaft, der Naturgeschichte, der Haushaltungskunst, Kamerawissenschaft und der dahin einschlagenden Litteratur*, Berlin, 1777, Bd. 9, Stuck 5, p. 493-496.

The insects described by Fladd were: *Tenebrio molitor*, *Dermestes pellio*, *Byrrhus museorum*, *Ptinus pertinax*, *Phalaena linea granella*, *Blatta orientalis*, *Termites pulsatorium*, and *Acarus* with their eating habits, etc. After giving a really interesting list of thirty-one odorous, poisonous or repellent substances which have been used from time to time throughout the ages as

bookworm remedies, he goes on to give his own recommendations which included the use of lime, the use of parchment binding, the use of oak or fir treated with oil or lime for shelving purposes, no paste to be used and no wood for binding boards. For the prize which occasioned this paper see the entry under Oekonomische Preisfragen. For summaries and reviews see entry under Hermann and others.

— See also HERMANN, JOHANN, AND OTHERS.

75. FRISCH, JOHANN LEONIARD. Vom kleinen Speck-Kafer mit dem weissen Quer-Strich auf den schwartz-braunen Flugeln, und von der Motte, voraus er wird. illus. (In his: Beschreibung von allerley Insecten in Deutschland... Berlin: Christoph Gottlieb Nicolai, 1736. 8°. Theil 5, p. 25-27.) QIW

This work appeared in thirteen fascicles, 1720-1738. There are several editions and partial reprints dated 1724, 1730, 1736, 1752/53, and 1766. NN copy is of 10 Theile, 1721-1736. Copy in ICJ is full 13 Theile, 1730-1736. The first edition of Theil 5 would appear to be 1724. The insect described is *Anobium panicum*. Frisch recounts its damage to books and identifies it with his Brodt-Kafer; see Theil 2, 1721, p. 36-38, and Tabula VIII.

76. HERMANN, JOHANN. Gekrönte Preis-schrift zur Beantwortung der von der Koeniglichen Societät der Wissenschaften zu Goettingen fuer den Julius dieses Jahrs aufgegebenen Preisfrage... (Hannoverisches Magazin. Hannover, 1774. 12°. Jahrg. 12, Stuck 92, 93, 94, col. 1457-1502.) * DF

Hermann's device under which the paper was submitted to the judges was "Blattis futuris praeda opulentior liber."

A full paraphrase of Hermann's work with additional material appears under *Bücher-würmer* in Johann Georg Krünitz, *Oekonomische Encyclopädie, oder allgemeines System der Staats-Stadt-Haus- und Landwirtschaft*, Berlin: Joachim Pauli, 1784, Theil 7, 2. Auflage [unaltered], p. 328-346. * AM.

Italian translation: "Dissertazione... sul quesito quante specie insetti vi sono, che negli archivi, e nelle biblioteche danno il quanto a' manoscritti ed a' libri..." in *Opuscoli scelti sulle scienze e sulle arti*, Milano, 1778, tomo 1, p. 28-37. * ER. According to Hagen, *Bibliotheca entomologica*, Leipzig, 1862, Bd. 1, p. 360, there is a review of Hermann's paper in Johann Beckmann's **Physikalisch-oekonomische Bibliothek*, Göttingen, Bd. 5, p. 271.

This paper won the prize offered by the society noted in the title, for the terms of which see the entry under Oekonomische Preisfragen. For summaries and reviews of this and the other two papers receiving honorable mention see under Hermann and others. In preparing this paper Hermann carried on investigations and experiments in six libraries and two archives. He absolves many insects, notably *Lepisma* and names only three injurious to books and papers: *Ptinus pertinax*, *Dermestes paniceus*, and a third injurious to bindings, either *Dermestes lardarius*, *Dermestes pellio* or *Byrrhus museorum*. He pointed out the dangers in using arsenic and sublimate, and the short duration of the effects of alum and colocynth. In reviewing the various qualities of various leathers he makes recommendations for insect proofing of binding materials. He included practically all of the recommendations of the other two contestants and adds several more, including a lac varnish for certain bindings, advice on the construction of shelving in order to obtain a free circulation of air, and advice on matters of dusting and general cleanliness.

77. * HERMANN, JOHANN, AND OTHERS. Drey Preisschriften zu Beantwortung der von der Königlichen Societät der Wissenschaften zu Göttingen aufgegebenen Preisfrage, die den Urkunden und Büchern in Archiven und Biblio-

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thecken schädlichen Insekten betreffend. Hannover: Helwing, 1775. 54 p., 7 pl.

Pages 1-21, Hermann; p. 23-39, anonymous; p. 41-54, Fladd. No copy located in this country.

All three papers were summarized with the decision of the judges in *Göttingische Anzeigen von gelehrten Sachen unter der Aufsicht der Königl. Gesellschaft der Wissenschaften*, Göttingen, 1774, Bd. 2, Stuck 87, p. 737-746. * DF. This summary was reprinted in *Berlinische Sammlungen zur Beförderung der Arzneywissenschaft, der Naturgeschichte, der Haushaltungs-kunst, Kameralkissenschaft und der dahin einschla-genden Litteratur*, Berlin, 1775, Bd. 7, p. 383-396. Summary by F. Bartsch: "Schädliche Papierinsekten," *Wochenblatt für Papierfabrikation*, Biberach, 1909, Jahrg. 40, Nr. 13, p. 1023-1024. Bartsch attributes the anonymous paper to Georg Friedrich Wehrs but does not substantiate the claim. It is not evident from Wehrs' own summary of the three papers in his *Vom Papier*. See under Wehrs. According to Hagen, *Bibliotheca entomologica*, Leipzig, 1862, Bd. 1, p. 239, there is a review in Johann Christian Polykarp Erxleben's *Physikalische Bibliothek*, Göttingen, 1779, Bd. 4, p. 103. And again according to Hagen — Bd. 1, p. 360, there is supposed to be additional material in the *Hannoverisches Magazin* for 1792 and 1794, but he does not cite the articles. The 1794 item has not been identified but the 1792 item may be "Etwas für Liebhaber aufbehalter Kräuter, sauberer Gemälde und Kupferstiche, und verschiedener Insektenversammlungen," *Neues Hannoverisches Magazin*, Hannover, 1792, Jahrg. 2, Stuck 62, Aug. 3, 1792, col. 991-992. * DF.

In the summary noted above Fladd's paper was anonymously referred to under the device "Difficile est veritatem non dicere," but the authorship of the paper was revealed in *Göttingische Anzeigen von gelehrten Sachen*, Göttingen, 1774, Bd. 2, Stuck 1, p. 921-922. * DF.

For the terms of the prize contest see under Oekonomische Preisfragen...

All three articles are printed in full but without the plates, apparently previous to their appearance in book form. For these articles see under separate names, Hermann, Fladd, and the anonymous one under "E parvis saepe ingens noxa," which was the device under which the paper was submitted to the judges. These three papers constitute an excellent summary of bookworm knowledge up to that time, and gather together all the known remedies.

78. * LEIPZIGER Intelligenzblatt. Leipzig, 1774, Stuck 35, p. 307.

Title from the *Standorts Katalog wichtiger Zeitungs-Bestände*. According to Johann Georg Krünitz, *Oekonomische Encyklopädie*, Berlin, 1784, Theil 7, p. 328 the above reference concerns bookworm remedies.

79. * LINNAEUS, CAROLUS. Bref från Archiatern och Rid. Hr. C. von Linné til Secreteraren och Rid. Hr. P. Wargentin. Hammarby, d. 24 Sept. 1766. (Sweden. — Kungliga Biblioteket. Kongl. Bibliotekets tidningar om lärda saker. Stockholm: Utgivne af C. C. Gjörwell, 1767. 8°. årg. 1767, del 2, stycck 5, p. 70-71.)

On the bookworm *Cerambyx fur*. This periodical often quoted simply as *Tidningar om lärda saker*. Copy: CtY.

German translation: "Brief von Archiater und Ritter Hr. C. von Linné an den Sekretär und Ritter Herr P. Wargentin. Hammarby, den 24 September 1766" in Linné's *Gesammelte Schriften entomologischen Inhaltes. Herausgegeben von Felix Bryk. Linné als praktischer Entomologe*, Stockholm: Im eigenen Verlage, 1924, no. 16, p. 76-77. Copy: DA.

cf. British Museum. — Natural History Department. A catalogue of the works of Linnaeus. 2. ed. London, 1933. nos. 1203 and 1204.

80. * LINNAEUS, CAROLUS. [Report on a beetle which is very injurious to libraries.] (*Inrikes Tidningar*, Stockholm, 1766, no. 63.)

* Translation: "Nachricht von einem höchst schädlichen Insekt für die Büchersammlungen," *Berlinisches*

Magazin, oder gesammelte Schriften und Nachrichten für die Liebhaber der Arzneywissenschaft, Naturgeschichte und der angenehmen Wissenschaften überhaupt, Berlin, 1769, Bd. 4, p. 411-414. Copy: PPAN.

Concerning *Cerambyx* now *Pinus fur*. Linnaeus was the first to describe the damage caused by this insect in libraries.

81. * LE MOINE. *Sécret pour préserver les livres, les parchemins, les papiers de la moisissure; des mites & des vers*, donné par Mr. le Moine. (Gazette salutaire. Bouillon, 1766. no. 8.)

Noted by Johann Georg Krünitz, *Oekonomische Encyklopädie*, Berlin, 1784, Theil 7, p. 346.

82. * LESSER, FRIEDRICH CHRISTIAN. *Insecto-theologia, oder Vernunft und schrifttmäßiger Versuch, wie ein Mensch durch Betrachtung der Insecten zur Erkänntnis Gottes zu gelangen gepräget*. Leipzig: Blochberg, 1738. 8°.

French translation: *Theologie des insectes ou démonstration des perfections de Dieu dans tout ce qui concerne les insectes*. Traduit de l'allemand de Mr. Lesser avec des remarques de Mr. P. Lyonnet. La Haye: Jean Swart, 1762. 2 v. Copy: NNM. There are other editions and translations. For books as food of insects see in the 1762 ed., v. 1, tome 1, p. 261-262. Copy of the German 1738 ed.: DA.

83. LIVRE (relieur). *Observations sur les insectes qui rongent les livres*. (In: *Encyclopédie, ou dictionnaire raisonné des sciences, des arts et des métiers*, par une société de gens de lettres mis en ordre et publié par Denis Diderot

... Supplément à l'*Encyclopédie*...mis en ordre et publié par M***. Amsterdam: M. M. Rey, 1777. f°. tome 3, p. 764-765.) †* AP

And therby bangs a tale. Édouard Rouveyre in his *Connoissances nécessaires à un bibliophile*, Paris: Rouveyre, 1879, v. 1, p. 101-104, * HD, quotes the most of this article and attributes it to Jean le Rond d'Alembert without giving the source of the article or reasons for attributing it to d'Alembert. While d'Alembert was the editor of the mathematical part of the Diderot *Encyclopédie* he may not have had an active part in the production of the supplement. The signature of this article (which had another article appended, both apparently from the same source since there is but one lead word) is (+) indicating that the articles were taken from a foreign edition of the *Encyclopédie*. Such foreign editions as have been examined (Livreune supplement, 1778-79; Lucques supplement, 1778; Genève, 1777-79; and Lausanne, 1780-82, the latter two in the proper place in the main alphabet) give the same information, quite naturally as they are of a later date than 1777. The term foreign edition possibly refers to the Yverdun edition, 1770-80.

The article in question compares so closely, almost word for word, with that of Zincke and Ew in the *Leipziger Sammlungen*, 1744, which see, that one cannot but believe that the editor of the foreign edition either translated this article or incorporated someone else's translation of it. The article is quite archaic for 1777, since Hermann's and Fladd's work appeared in 1774 and 1775.

It is most likely that the translation already existed since the same article in an abstracted form appeared in 1765 as follows: "Réflexions sur les insectes qui ravagent les livres." Jean Louis Alléon-Dulac, *Mélanges d'histoire naturelle par Alléon Dulac*, Lyon: Benoit Duplain, 1765, tome 5, p. 296-297. Copy: MH. This abstract has one added statement, namely that English-made paper is seldom attacked by insects, a statement that probably is drawn from Urban's editorial note appended to the account in the *Gentleman's magazine*, 1754 (see under Zincke and Ew). The *Mélanges* abstract was translated into English, appearing in *Chambers' Cyclopaedia, Supplement*, London, 1786, v. 1, under the word Bookworm with credit given to the *Mélanges*. †* AL (The 1786 supplement is a reprint of the 1778 supplement "with modern improvements...[edited] by Abraham Rees. London: W. Strahan."). And therefrom, with additions and corrections, it ap-

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peared in *Rees' Cyclopaedia...* first American edition revised...and enlarged... Philadelphia: S. F. Bradford [18—?], v. 5, under the word Bookworm, *AL, the first parts of which appeared in 1802 or 1803; authorities differ.

84. MEINECKE, JOHANN HEINRICH FRIEDRICH. Entomologische Beobachtungen. Ueber die Insekten, die in den Sammlungen natürlicher Körper den meisten Schaden thun; und über die Mittel sie zu vertreiben. (Der Naturforscher. Halle, 1774. 8°. Stuck 3, p. 55-82.)

Reprinted in *Magazin für die Liebhaber der Entomologie*, Zurich and Winterthur, 1779, Bd. 2, p. 125-152.

A description of several insects injurious to entomological collections including those injurious to books, giving the natural history and remedies for *Ptinus sur*, *Dermestes lardarius*, *Dermestes peltia*, *Termitus pulsatarium*, and a species of Staub or Papierlaus temporarily called *Termitus fatidicum*, also the book scorpion or *Phalangium cancellatum*, enemy of the latter. Quotes Frisch's observations and gives some general rules for the preservation of books.

85. * MOYEN très simple pour préserver les livres de la moisissure ou de la piqûre des vers. (*Gazette salutaire*. Bouillon, 1766. no. 13.)

Noted by Johann Georg Krünitz, *Oekonomische Encyklopädie*, Berlin, 1784, Theil 7, p. 346.

86. * NÜTZLICHE Beiträge zu den Neuen Streitischen Anzeigen. Neustrelitz, 1774, Stuck 29.

Title from J. Kirebner, *Grundlagen des deutschen Zeitschriftenwesens*, no. 1434. According to Johann George Krünitz, *Oekonomische Encyklopädie*, Berlin, 1784, Theil 7, p. 328, this issue of the above periodical contains bookworm remedies.

87. [OEKONOMISCHE Preisfragen, der Göttingischen Societät der Wissenschaften auf den Juli 1774.] (Göttingische Anzeigen von gelehrt Sachen. Göttingen, 1773. 12°. Bd. 2, Stuck 88, July 24, p. 753.) *DF

A prize of twelve ducats was offered for the best paper answering the following questions: What kinds of insects are injurious to books and archives? What part of the book is each species particularly fond of? What are the means of repelling and killing the insects? For the papers submitted see under Hermann and others.

88. OELRICHS, JOHANN CARL CONRAD. Excerpta ex dissertatione Oelrichiana de libris comestis. (In: Heinrich Wilhelm Klemm, Henr. Guili. Clemmii... Novae amoenaitates litterariae... Stuttgartiae: J. B. Mezler, 1762-64. 8°. [fasc. 4] p. 556-568.) NABO (Clemmiius)

From the original: *Dissertatio de bibliotecarum ac librorum fatis, in primis libris comestis. Praefationis loco, catalogus partis bibliothecae numerosissimae, lectissimae ac nitidissimae. Berolini 111. Kal. Dec. et seqq. Sedini: Typis Spiegelianus, 1756. Ixiii p. 8°.*

The actual eating of books by mankind, included for its unusual interest though not really a bookworm reference. See also under Delapierre. Copy of original: NjP.

89. OLIVIER, GUILLAUME ANTOINE. Dermeste. Dermestes. (In: Louis Jean Marie Daubenton, editor, *Histoire naturelle. Insectes*, par M. Olivier. Paris: Panckoucke, 1791. 4°. v. 6, p. 262-263.) *AP (Encyclopédie)

Encyclopédie méthodique. [v. 113.]

Includes instructions for the preparation of a remedy originated by the apothecary and naturalist Jean Baptiste Bocour, said to be effective in the preservation of natural history collections. Quoted also by Pozzetti, which see.

90. * OTTO, CHRISTOPH. Onomatologia oeconomico practica oder oekonomisches Wörterbuch [von Cph. Otto] mit einer Vorrede von Th. Hnr. v. Justi. Ulm, Frankfort u. Leipzig, 1760-63. 3 v. 8°.

Title from Kayser. Copy: DA. According to Johann Georg Krünitz, *Oekonomische Encyklopädie*, Berlin, 1784, Theil 7, p. 328 the above work, 1760, Theil 1, col. 774 recommends that the following substances be used in the paste to counteract bookworms: colocynth, buck-bean (*Menyanthes trifoliata*), centaury (*Erythraea centaurium*), and sprouts of wormwood.

91. P. Mittel wider den Bücherwurm. (Neues Hannoverisches Magazin. Hannover, 1801. 12°. Jahrg. 10, Stuck 86, Oct. 27, 1800, col. 1581-1584.) *DF

Including oil of turpentine, tobacco smoke, powdered tobacco mixed with powdered leaves of wormwood, and bitter chestnuts. Habits of bookworms.

92. PARNELL, THOMAS. The book-worm. (In his: Poems on several occasions... London: Printed for B. Lintot, 1722. 12°. p. 134-140.) NCL

Also in his poetical works and various editions of the British poets. According to Oliver Goldsmith this is an unacknowledged translation from Béze, but Samuel Johnson adds "a translation...with modern applications." (Goldsmith, *Life of Parnell in The British poets*, Boston: Little, Brown and Co., 1854, p. xxxix, and Johnson, *Life of Parnell in The British poets*, Chiswick: C. Whittingham, 1822, p. 121.)

An anonymous writer in *Book-lare*, London, 1886, v. 3, p. 110-111, *GAA, quotes the poem and notes that it is the first poem in the English language on the subject, but if the Holme riddle may be called a poem (see Tupper) the honor goes to the riddle.

93. PREDIGER, CHRISTOPH ERNST. Der in aller heut zu Tag üblichen Arbeit wohl anweisende accurate Buchbinder und Futteralmacher, welcher lehret, wie nicht nur ein Buch auf das netteste zu verfestigen, sondern auch wie solches seine gebührende Dauer hält, absonderlich wie es in den Stand zu bringen, dass die so schädlichen Würme solches unangetastet lassen, und wo sie auch wirklich in Bibliotheken allschon eingestet haben, zu verweisen sind... alles aufrichtig entdecket, beschrieben, und mit den nöthigsten Kupfern versehen durch Christoph Ernst Prediger, Buchbinder in Anspach. Anspach: Zu finden in der Poschischen Hofbuchhandlung, 1751-72. 4 v. 8°. *ITR

The above title-page is taken from v. 1, 1772. This set is made up from several editions. The first edition of Theile 1 and 2 is 1741 or 1740, see below. Theile 3 and 4 are variously dated 1749, 1751-53. Houlbert's bibliography cites a 1754 reprint and there is also a 1772 reprint. There seem to have been simultaneous editions or partial editions in 1741, 1749, 1751-53 at Anspach, Frankfurt, Leipzig, and Nürnberg. The bibliographies of both Houlbert and Hagen (*Library journal*) state that the first edition is unknown, but the Union Catalogue in Washington notes a 1740-53 four-volume set in CSmH. As a final note to this rather involved statement of editions we note that Theil 3 of the NN copy is dated 1764.

Bookworms are mentioned in Theil 1, 1772, p. 15, 199. On p. 200-202 we find "Conversation der Bücher vor die Würme" wherein alum and pepper are recommended. Also in March, July, and September the books should be wiped with a woolen cloth and powdered alum. See also Theil 4 (date unknown, mutilated copy), p. 44-54, "Vom Vergulden der Kahl-Leder-Bände." In this section Prediger gives habits of bookworms and various remedies such as alum in the paste. Parchment binding unaffected by insects. Houlbert and Hagen both cite material in Theil 3, not found in NN 1764 copy.

Eighteenth Century, continued

94. * REALZEITUNG, 1755, p. 285.

Unidentified reference first noted in Georg Rudolph Boehmer, *Bibliotheca scriptorum historiae naturalis*, Lipsiae, 1786, pars 2, vol. 2, p. 183 and copied by Hagen and Houbert in their bibliographies with the addition "Berliner?" Still unidentified.

95. RÉAUMUR, RENÉ ANTOINE FERCHAULT DE. Mémoires pour servir à l'histoire des insectes. Paris: de l'Imprimerie royale, 1734-42. 6 vols. QIL

See tome 3, 1737, p. 270 and pl. 20, fig. 6 for the "Fausse teigne des cuirs" which is injurious to books. According to Houbert (*Les insectes ennemis des livres*, p. 211) this is the *Aglossa cuprealis*. Houbert includes the whole Réaumur set in his bibliography on account of its interesting biological details.

96. SCHRANK, FRANZ VON PAULA. Enumeratio insectorum Austriae indigenorum. Augustae Vindelicorum: Apud Vidvam Eberhardi Klett et Franck, 1781. 548 p. 12°.

See no. 1058 on p. 513-515 for *Acarus eruditus* [or] Büchermilbe which, he states, feeds on the paste in books. This has been proven untrue. Other insects mentioned being found in books are *Lepisma* and *Termes pulsatorum*. Copies: DA, NNM.

97. SMEATHMAN, HENRY. Some account of the termites which are found in Africa and other hot climates. In a letter from Mr. Henry Smeathman of Clement's Inn to Sir Joseph Banks, Bart. P.R.S. illus. (Royal Society of London. Philosophical transactions. London, 1781. 8°. v. 71, p. 139-192, Pl. vii-x.) * EC

A classic item on termites. Book damage recorded on p. 179-180.

98. VOLPI, GAETANO. Varie avvertenze utili e necessarie agli amatori di 'buoni libri' disposte per via d'alfabeto. (In his: La libreria de Volpi e la stamperia cominiana. Illustrate con utili e curiose annotazioni... Padova: Giuseppe Comino, 1756. 16°. p. 529-579.)

A number of entries under insects, moths, rats, etc., with control measures under cypress, absinthe, erpiment, librarian, etc. Copies: NNC, MB.

99. WEHRS, GEORG FRIEDRICH. Von denen den Urkunden und Büchern schädlichen Insekten, und den Mitteln, solche theils davon abzuhalten, theils zu vertilgen. (In his: Vom Papier den vor der Erfindung desselben üblich gewesen Schreibmassen und sonstigen Schreibmaterialien. Halle: Johann Jacob Gebauer, 1789. 8°. chap. 15, p. 691-728.) VMP

Enumeration, description, and habits of bookworms with remedies. Based in part on the Preisschriften by Hermann and Fladd, etc.

100. WEHRS, GEORG FRIEDRICH. Wie man Bücher überhaupt gegen Würmer schützen. (Neues Hannoverisches Magazin. Hannover, 1800. 12°. Jahrg. 9, Stuck 51, June 28, 1799, col. 827-828.) * DF

Referring to his book and to other articles on the subject in this same periodical.

101. WIE man Bücher gegen Würmer schützen, und wie man solche aus Lederbänden vertreiben und künftig abhalten kann. (Neues Hannoverisches Magazin. Hannover, 1800. 12°. Jahrg. 9, Stuck 61, Aug. 2, 1799, col. 987-988.) * DF

Pepper and oil of anis recommended though the latter is said to be too expensive. Other remedies.

102. ZEDLER, JOHANN HEINRICH. Wurm in Büchern. (In his: Grosses vollständiges Universal-Lexicon aller Künste und Wissenschaften. Leipzig and Halle: Zedler, 1749. f°. Bd. 60, p. 22.) * AM

Advises shaking and striking the books to dislodge the worms or crush them. Rebinding advised in some cases.

103. * ZEIDLER, JOHANN GOTTFRIED. Buchbinder-Philosophie oder Einleitung in die Buchbinderkunst, darinnen dieselbe aus dem Buch der Natur und eigener Erfahrung philosophisch abgehandelt wird, mit sonderbaren Anmerkungen zweyer wohlerfahrener Buchbinder, und zugehörigen Kupfern. Haile: Renger, 1708.

Name also given as Zeitler. According to Johann Heinrich Zedler's *Grosses vollständiges Universal-Lexicon*, Halle and Leipzig, Supplement Bd. 1, 1768, p. 49 this early work on bookbinding contains advice on dealing with bookworms. No copy located.

104. ZINCKE, GEORG HEINRICH. Anmerckung von denen Motten und Schaben. (In his: Leipziger Sammlungen von Wirtschaftlichen-Policey-Cammer- und Finanz-Sachen. Leipzig: Carl Ludwig Jacobi, 1745. 12°. Bd. 1, Stück 6, p. 473-482.) * AM

The first edition of Bd. 1 was dated 1742. Copy: ICU. The full set is composed of 16 volumes, 1742-67, with a General-Register über die ersten zwölf Bände. The Stück numbers are one year earlier than the date of the title-page of the volume. In the present article Zincke gives a variety of information on insects attacking clothes, pelts and books with remedies indicated, and notes the remedies of Apius (Siegmund Jacob Apin), which see.

He also gives the speculations of one Franzius who believed that insects were the cause of so many books of the learned having disappeared thereby bringing about the "varientes lectio[nes]" over which the critics ponder. Krüntz in his *Ökonomische Encyclopädie*, Berlin, 1784, Bd. 7, p. 328 notes that there is additional material in a sixteenth volume dated 1767, p. 36. The set *Leipziger Sammlungen* is sometimes treated as a periodical and will be found in the *Union List of Serials*. The name Zincke is also spelled Zink, Zinken and Zincken.

105. ZINCKE, GEORG HEINRICH, AND EW. Sendschreiben, diejenigen Insecta betreffende, welche die Bücher befressen. (In his: Leipziger Sammlungen von Wirtschaftlichen-Policey-Cammer- und Finanz-Sachen. Leipzig: Carl Ludwig Jacobi, 1744. 12°. Bd. 2, Stück 16, p. 324-327.) * AM

Recounts Prediger's remedies and appends a long letter from Ew. The latter refers to Frisch, then gives his own observations and recommends that Sal arcanum duplicatum (alum and vitriol) be mixed with the paste used for bookbinding, absinthe, colocynth, etc., having been found ineffective. Ew states that it is the larvae, from the eggs laid in the binding by small beetles, that cause the damage by eating their way out when they hatch. The beetles themselves are not to blame.

Abstract: "Mittel die Kleider für den Motten, und die Bücher für den Würmern zu verwahren" in *Berlinische Sammlungen zur Beförderung der Arzneywissenschaft, der Naturgeschichte, der Haushaltungskunst, Kameralwissenschaft und der dahin einschlagenden Literatur*, Berlin, 1775, Bd. 7, p. 613-614. Translation in abstracted form: "To preserve books from the depredations of worms and insects," in *Gentleman's Magazine*, London, 1754, p. 73, * DA. Sylvanus Urban adds an editorial note stating that worms seldom attack books printed on English-made paper.

For the further history of this article by Zincke and Ew see under Livre (Relieur).

NINETEENTH CENTURY

106. * ACHARD, CLAUDE FRANÇOIS. *Cours élémentaire de bibliographie, ou la science du bibliothécaire...* Marseille: J. Achard, 1806-07. 3 v. 8°.

According to Horne, *Introduction to the study of bibliography*, London, 1814, v. 1, p. 312, this has recommendations on insect control, such as using alum in the paste, v. 3, p. 217. Copies: DLC, NjP, NjN.

107. ALETHES, PSEUD. *Worms in books. (Notes and queries. London, 1853. 8°. [series 1], v. 8, p. 412.)* * R-* DA

Smoke, presumably of burning wood, and Russia leather shavings both ineffectual. Answers in 1853, v. 8, p. 526. Newhuriensis, pseud., gives conflicting evidence on shavings of Russia leather; 1854, v. 9, p. 527. F. C. H. recommends powdered colocynth.

108. ALKAN, ALPHONSE, THE ELDER. *Les livres et leurs ennemis. (Bulletin du bibliophile et du bibliothécaire. Paris, 1883. 8°. p. 221-230.)* * GAA

Also issued as a separate: Paris: Téchener, 1883. 16 p. 8°.
A review essay on Blades' book.

109. ALLSOP, THOMAS. *On preventing the ravages of the book-worm, the white ant, &c. illus. (In: Technical repository...[edited] by Thomas Gill. London, 1824. 8°. v. 5, p. 100, pl. iv, fig. 5.)*

Writing from Madras, India, the author states that it is the practice in parts of the East to lay the leaves of the margosa tree in books and to use a mixture of the oil from the leaves and green vitriol in the binder's paste. Timber is preserved from white ants by painting with a mixture of oil expressed from the nut and petroleum. The leaf from this tree of Malabar is illustrated. For further details by the same author see v. 7, p. 17 (1825) "On the properties of the margosa and rock oils," and v. 8, p. 315 "Further observations on preventing the ravages of the book-worm," wherein it seems the margosa oil used alone is almost ineffective.

German translation: "Mittel gegen den Büchern-Wurm und die Ameisen" in Dingler's *polytechnisches Journal*, Stuttgart, 1824, Bd. 14, p. 136-137, 3-4 V.A. And further (reported by Molbeck — *Ueber Bibliothekswissenschaften*, Leipzig, 1833, p. 165) in *Blätter für literarische Unterhaltung*, Leipzig, 1828, Nr. 128, p. 511 wherein the technical name of the tree is given as *Melia azaderach*, and the statement made that the remedy is used in Italy.

110. ANSSE DE VILLOISON, JEAN BAPTISTE GASPARD D'. *Des manuscrits grecs et latin qui, de la bibliothèque des anciens empereurs grecs et de celle du Séraïl de Constantinople, sont passés dans la Bibliothèque impériale, et éclaircissements sur quelques-unes des plus fameuses bibliothèques de la Grèce. (Académie des inscriptions et belles-lettres. Notices et extraits des manuscrits de la Bibliothèque impériale et autres bibliothèques. Paris, 1810. 4°. tome 8, partie 2, p. 3-33.)* * EO

Various passages mentioning the irreparable book-worm damage to manuscripts in the old monastic libraries in Greece and Constantinople. Villon made a literary tour in this region around 1783.

111. ANSSE DE VILLOISON, JEAN BAPTISTE GASPARD D'. *Mémoire sur quelques inscriptions*

inconnues, ou publiées inexactement: extrait de la Relation du voyage littéraire fait dans le Levant. (Académie des inscriptions et belles-lettres. Histoire avec les mémoires de littérature tirés des registres de cette académie. Paris, 1809. 8°. tome 47, p. 283-344.) * EO

On p. 321-322 it is stated that insects are the greatest scourge of the Levant and more dangerous than in our countries. The books which he carried with him were badly damaged in three years' time. This passage is given almost word for word in Gabriel Peignot's *Traité du choix des livres*, Paris, 1817, p. 279, with the notation that it comes from Ansse de Villon's *Fragments sur la Grèce*. This title has not been found though it is possible there was a reprint of this article under that title. The *Relation du voyage littéraire*, from which the present article was taken, was never published (see Charles Joret, *D'Ansse de Villon et l'hellenisme en France*, Paris, 1910, p. 392, Bibliothèque de l'Ecole des hautes études. Sciences historiques et philologiques, fascicule 182, * EN). There is a further description of the terrible condition of the libraries Villon visited in his *Anecdota Graeca e regia Parisiensi & e Veneta S. Marci bibliothecis deponpta*, Venetiis: Fratrum Coleti, 1781, v. I, p. v. Copies of the *Anecdota Graeca*: DLC, MB, NjP.

112. ARNASON, JÓN, EDITOR. *Islenzkar gátur. Kaupmannahöfn: S. L. Müller, 1887. 157 p. (Islenzka Bókmentafelag. Islenzkar gátur, skemtanir, vikivakar og pulur. [v.] 1.)*

ZBD (Islenzka)

See riddle no. 761 for a similar one in Icelandic which compares with the enigma no. 16 of Symphosius, which see. This 1887 publication is a collection of riddles many of which have a close resemblance to those in *Heidreks gátur* though the present one is not included there.

113. ARNOLD, E. C. *Injurious insects. (Library journal. New York, 1881. 8°. v. 6, p. 40.)* * HA

A letter from the public library of Taunton, Mass., referring to injury of the sheepskin bindings of the Congressional set caused by a beetle. Drawing of beetle.

114. ARNOLD, WILLIAM HARRIS. *An account of book-worms. illus. samples. (In his: First report of a book-collector... Jamaica, N. Y.: Marion Press, 1897-98. 4°. p. 73-91, bibliography, p. 93-97.)* * KP (Marion)

For Arnold's description of the making of the above chapter and for Bernard Quaritch's comment thereon see Arnold's *Ventures in book collecting*, New York: Charles Scribner's Sons, 1923, p. 8-11, * GAN. The "account" is a description of many of the worst species and the damage caused in various books and libraries. He states that it is unusual to find an American-made book that has been attacked. Samples of worm-eaten paper in pocket, and others tipped in. About sixty references in the bibliography, many strictly biological and not included in this present list.

115. ASTLE, THOMAS. *The origin and progress of writing as well hieroglyphic as elementary, illustrated by engravings taken from marbles, manuscripts and charters, ancient and modern... Second edition, with additions. London: Printed by T. Bensley for J. White, 1803. 240 p. 4°.* * IC

See p. 197-198. Romans used cedar chests and cedar oil for the protection of their books; quotes classical poets and cites Vitruvius and Pliny.

Nineteenth Century, continued

116. AUSTEN, WILLARD. Bookworms in fact and fancy. (Appletons' popular science monthly. New York, 1899. 8°. v. 55, p. 240-248.)

* DA (Popular)

Reviewed in the *Library Association record*, London, 1899, v. 1, p. 496-497. * HA; and in the *Library journal*, New York, 1899, v. 24, p. 266. * HA. A review of classical references followed by a description of the various kinds of bookworms with stories of damage.

117. AUSTEN, WILLARD. Of book-worms. (Nation. New York, 1896. 4°. v. 62, p. 305-306.)

* DA

Sitodrepa panicea discovered in the Cornell University Library in 1893. Relates other discoveries of bookworms.

118. BANGS, JOHN KENDRICK. Bookworm ballads: a literary feast. (In his: Cobwebs from a library corner. New York: Harper, 1899. 16°. p. 5-7.)

NBI

Poetry. The famous humorist of the gay nineties wrote several bookworm ballads which do not seem to have been collected in any one place. Only those which happened to turn up have been included here.

119. BANGS, JOHN KENDRICK. Bookworm ballads: a painful discovery. (Harper's new monthly magazine. New York, 1894. 8°. v. 89, p. 646.)

* DA

Poetry.

120. BANGS, JOHN KENDRICK. Bookworm verses: a light luncheon. (Harper's new monthly magazine. New York, 1894. 8°. v. 89, p. 482.)

* DA

Four of the six stanzas reprinted in *The Bookworm. An illustrated treasury of old-time literature*, London, 1894, [v. 7], p. 293. * GAA.

121. BANGS, JOHN KENDRICK. A library pet. (Harper's new monthly magazine. New York, 1893. 8°. v. 88, p. 972.)

* DA

Poetry.

122. BATES, WILLIAM. The book-worm. (Notes and queries. London, 1862. 8°. series 3, v. 1, p. 57-58.)

* R-* DA

Receipt consisting of camphor and colocynth or tobacco, transcribed from the fly leaf of an old book. A Mr. Grant in 1792 received the receipt from Dr. Egerton, bishop of Durham.

123. BETHUNE, CHARLES JAMES STEWART. [Library pests.] (Entomological Society of Ontario. Annual report for 1897. Toronto, 1898. 8°. [no.] 28, p. 61.)

QII

Records successful operations against *Lepisma* with carbon bisulphide in the public library at Hamilton, Bermuda.

124. BIRDSONG, J. C. Insect pests. (Library journal. New York, 1887. 8°. v. 12, p. 152.)

* HA

Note asking for an insect powder to prevent damage by bookworms. An anonymous answer on p. 174 recommends camphor and snuff.

125. BLADES, WILLIAM. The bookworm; other vermin. illus. (In his: The enemies of books. London: Trübner, 1880. 12°. p. 57-82.) * HHL

Later editions give a fuller account; Chicago: McClurg [1896], p. 63-88, * HHL; London: Stock, 1902,

p. 61-94. * HHL. French translation: *Le livre et leurs ennemis*. Paris: Clauvin, 1883. 128 p. And also a few chapters: "Le livre et leurs ennemis" in *Le livre, revue mensuelle, Bibliographie ancienne*, Paris, 1880, v. 1, p. 322-325, 387-389, 417-420, * GAA. These two chapters of his book were based on parts 3 and 4 of his article "Books and their enemies" in *Printers' register*, London, 1879, v. 19, p. 28-29, 67-68.

In a facetious manner Blades recounts some bookworm stories, quotes Dovaston's poem, describes a bookworm (no particular species mentioned) and the damage caused. He states that the cockroach is too newly resident in England to have done much harm, and he all but absolves the *Lepisma*.

126. BLADES, WILLIAM. Bookworms. (Notes and queries. London, 1861. 8°. series 2, v. 11, p. 506.)

* R-* DA

Anobium pertinax said to be the chief European bookworm. Believes modern paper composed of "fibre, clay and flint-dust" would not support the life of imported varieties of oriental bookworms.

127. * BOBE-MOREAU, C. J. Mémoire sur les termites observés à Rochefort et dans divers autres lieux du département de la Charente-Inférieure. Saintes: A. Hus, 1843. xliv, 123 p. illus. 8°.

Copy: MH. A full record of the ravages of white ants in France, particularly in Rochefort where they did considerable damage to the archives. Abstracted in H. Hagen, "Monographie der Termiten," *Linnæa entomologica*, Berlin, 1855, Bd. 10, p. 127-136, QII.

128. BONNARDOT, ALFRED. Essai sur l'art de restaurer les estampes et les livres ou traité sur les meilleurs procédés pour blanchir, détacher, décolorier, réparer et conserver les estampes, livres et dessins. Paris: Castel, 1858. 352 p. 12°.

* HHL

First edition, Paris, 1846. Method of repairing worm-eaten books given on p. 137-143.

129. The Bookworm. (The Bookworm. An illustrated treasury of old-time literature. London, 1888. 8°. v. 1, p. 3-7.)

* GAA

On the term bookworm, insect, biped, and book-lover.

130. The Bookworm. (The Bookworm. An illustrated treasury of old-time literature. London, 1894. 8°. [v. 7], p. 303-304.)

* GAA

Insect (*Anobium?*) and habits described. Experiment wherein it preferred eighteenth-century paper to modern paper.

131. The Bookworm's Story. (The Bookworm. An illustrated treasury of old-time literature. London, 1888. 8°. v. 1, p. 41-43.)

* GAA

Anonymous poetry.

132. BOWDEN, A. J. The bookworm. (Booklore. London, 1885. 8°. v. 1, p. 161-164.) * GAA

Bewailing the lack of scientific information and incidentally giving some misinformation.

133. BOWDEN, A. J. [A bookworm.] illus. (Publishers' circular and booksellers' record. London, 1884. 8°. v. 47, p. 662.)

* GDD

Reprinted in *Notes and queries*, London, 1884, series 6, v. 10, p. 386, * R-* DA, and in *Antiquary*, London, 1884, v. 10, p. 131 with illus., CA. The larva of an unidentified insect discovered boring in a bundle of quires of paper at Sotheran's Strand house.

Nineteenth Century, continued

134. BÜCHERWURM. (Papier-Zeitung. Berlin, 1896. 4°. Jahrg. 21, p. 1934.)

Short note on a bookworm on display in the window of a London bookseller.

135. [BÜCHERWÜRMER von Bibliotheken abzuhalten.] (Neues Hannoverisches Magazin. Hannover, 1803. 12°. Jahrg. 12, Stuck 84, col. 1339-140.) * DF

Every two or three months take the books out of the repository and dust them.

136. BURNS, ROBERT. The book-worms. (In his: Works. Edinburgh: William Paterson, 1877. 8°. v. 2, p. 66.) NCF

Four-line stanza beginning "Through and through th' inspir'd leaves," written anonymously on the leaf-margin of a copy of Shakespeare in the library of a nobleman whom Burns was visiting. This poem appeared in print for the first time in the 1834 eight-volume edition, London: Cochrane and M'Crone. See v. 3, p. 293, NCF.

137. C. [Queries on the preservation of books.] (Gentleman's magazine. London, 1829. 8°. v. 99 [new series, v. 22], part 1, p. 599-600.) * DA

In the NN set called v. 145.
A tale of woe and a request for information. Reprinted in Gomme, which see.

138. CAMPBELL, J. DYKES. Antidotes against bookworms. (Notes and queries. London, 1883. 8°. series 6, v. 7, p. 505.) * R-* DA

Prediger's remedies copied from the *Edinburgh Chronicle*, date 1759 or 1760, probably via the *Gentleman's magazine*.

CHITTENDEN, F. H., JOINT AUTHOR. *See HowARD, LELAND OSSIAN, AND OTHERS.*

139. COMITÉ CONSULTATIF DES ARTS ET MANUFACTURES. Note sur les moyens de préserver le papier des insectes qui le dévorent, dans les Antilles. (Société d'encouragement pour l'industrie nationale. Bulletin. Paris, 1821. 4°. année 20, p. 290-292.) 3-VA

François Xavier Donzelot, governor general of Martinique, observes that English-made paper is less subject to the ravages of insects than French-made paper. The committee considered the use of arsenic dangerous and appointed a sub-committee to study the possibility of impregnating paper with an insect repellent or preservative.

140. CONSERVATION des livres. (Bulletin de l'imprimerie. Paris, 1880. f°. année 5, [no. 42], p. 985.) †* IPA

German translation in *Archiv für Buchdruckerkunst und verwandte Geschäftszweige*, Leipzig, 1880, Bd. 17, col. 153. A short note recommending that the infested books be put in a tight box or closet with benzine; which would kill both the worms and the eggs if left for some weeks.

CONSTANTIN, LÉOPOLD AUGUSTE, pseud. *See HESSE, LÉOPOLD.*

141. CORYELL, JOHN R. The termite pest of the old world. illus. (Scientific American. New York, 1888. f°. v. 59. p. 151.) †† VA

Biology of termites and damage to books in St. Helena and China.

142. COTES, E. C. Miscellaneous notes from the entomological section: preservation of books

from insects in India. (Indian Museum notes. Calcutta: Office of the Superintendent of Government Printing, India, 1894. 8°. v. 3, no. 3, p. 115-116.)

Records damage by *Sitodrepa panica*, *Periplaneta americana* and *Termes* sp. in Calcutta libraries. Gives remedies used here and at the Royal Botanical Gardens Library at Sibapore. Recommends fumigation with benzine, then wipe lightly with kerosene; painting the books with a solution of corrosive sublimate; dishes of naphthalene in closed book-cases.

143. COUSIN, JULES. De moyens de remédier aux piqûres de vers, aux déchirures ou aux cassures dans le papier. (In his: De l'organisation [sic] et de l'administration des bibliothèques publiques et privées... Paris: Pedone-Lauriel, 1882. 8°. p. 169-170.) * HD

Repair of worm-holes.

144. COUSIN, JULES. Des moyens à employer contre les vers et les insectes. (In his: De l'organisation [sic] et de l'administration des bibliothèques publiques et privées... Paris: Pedone-Lauriel, 1882. 8°. p. 145-148.) * HD

Advice on kinds of wood to be used for shelving, materials for binding, general cleanliness, and remedies.

145. COWAN, FRANK. *Ptinidae*: death-watch. (In his: Curious facts in the history of insects... Philadelphia: Lippincott, 1865. 12°. p. 58-61.) QI

Collection of quotations on the superstitions connected with these insects, including damage to books.

146. CRICK, C. E. Book-worm, illus. (Northamptonshire notes and queries. Northampton, Eng., 1888. 8°. v. 2, p. 33.) CO

Abstract in *Book-lore*, London, 1886, v. 4, p. 85. * GAA.
Damage in the town library attributed to *Oecophora pseudospretella*.

147. CRUSIUS, F. J. Ueber die Anfertigung gegen Insektenfrass geschützter Einbände für wertvolle nach den Tropenländern zu versendende Bücher. (Wieck's deutsche illustrierte Gewerbezeitung. Berlin, 1869. f°. Jahrg. 34, p. 219-220.) 3-† VA

Reprinted in *Bayerisches Industrie- und Gewerbeblatt*, München, 1869, Jahrg. 1, p. 256, 3-† VA; *Polytechnisches Centralblatt*, Leipzig, 1869, Jahrg. 35 [N. F. Jahrg. 23], col. 1465, 3-VA; and * *Gewerbezeitung*, Fürth, 1869, Jahrg. 19, p. 67.

Books for export to the tropics should be especially protected from insect attacks by the use of alum and corrosive sublimate, and in addition, a special shirting applied to the still-wet poison lacquer.

148. CUNDALL, FRANK. Library work in Jamaica. (International Library Conference, 2nd, London, 1897. Transactions and proceedings. London: Printed for the members of the Conference [by Morrison and Gibb, Limited, Edinburgh], 1898. 4°. p. 172-178.) † HA

Towards the end of the article he records the fight against the *Anobium* and *Periplaneta* in Kingston, Jamaica. There are recommendations for woods to be used in book cases, materials to be used for binding and poisons to be applied. He states that *Lepisma* has not been convicted of damaging books.

149. DAVIDSON, J. EWEN. A remedy for book-worms. (Nature. London, 1898. 4°. v. 59, p. 126-127.) OA

Brief letter from Queensland, Australia, on the use of corrosive sublimate, thymol and alum.

Nineteenth Century, continued

150. DEEDES, CECIL. The bookworm. (Booklore. London, 1885. 8°. v. 2, p. 21.) * GAA

Records damage in the Bodleian Library and his own, by an unnamed insect. For correction of some of Deedes' statements see J. Whiteley in v. 2, p. 85.

151. DELANDINE, ANTOINE FRANÇOIS. Manuscrits de la bibliothèque de Lyon... Paris: Renouard, 1812. 3 v. 8°. * GY (Lyon)

The same reference is copied by Gabriel Peignot in his *Essai sur l'histoire du parchemin et du vélin*, Paris: Renouard, 1812, p. 56, 1, and thence by Paul Lacroix in his *Curiosités de l'histoire des arts par P. L. Jacob [pseud.]*, Paris: Delahays, 1858, p. 11, 3-V.

Makes reference to the 1221 decree of Frederick II, emperor of the Romans, which declared that all acts written on cotton paper were invalid and fixed a term of two years for their transcription on parchment. The poor quality of the cotton paper subject to the attacks of moisture and insects was given as the reason. See the Huillard-Breholles entry for the acts and discussion.

152. DELEPIERRE, JOSEPH OCTAVE. De la bibliophagie, communiqué par Onésyme Durocher [pseud.]. (Philobiblon Society. Miscellanies. London: Whittingham and Wilkins, 1866-67. 8°. v. 10, no. 3, p. 1-16.) * GAA

The actual eating of books by mankind and fishes. See also Johann Oelrichs. Though not strictly on the subject of bookworms these two items have been included in this bibliography for their unusual interest. Footnote references have not been included. Rouveyre in his *Cognosciences nécessaires à un bibliophile*, Paris, 1899, v. 8, p. 45 attributes this item to Delepierre. The Bibliothèque nationale lists it under Durocher.

153. DIBBIN, THOMAS FROGNALL. The bibliographical decameron; or, Ten days pleasant discourse upon illuminated manuscripts, and subjects connected with early engraving, typography and bibliography. London: W. Bulmer and Co., 1817. 3 v. 8°. * GBH

See v. 2, p. 437-443, text; and p. 443-447, 533, footnotes. The meat is in the footnotes. Various accounts of damage and quotations from entomologists, bookbinders, and poets. This is the eighth day of the ten.

154. DOVASTON, JOHN FREEMAN MILWARD. How to kill bookworms. (In his: Poems, legendary, incidental and humourous. [Third edition with additions.] Shrewsbury: W. Morris, 1825. 12°. p. [354].)

The first edition, Shrewsbury, 1812 under the title *Fitz-Gwarine* does not contain this poem.

This humorous poem has been reprinted several times. See *The Directory of second-hand booksellers, and a list of public libraries, British and foreign*. Edited by James Clegg, [3. ed.], Rochdale, 1891, p. 247 under the title "How to exclude bookworms."

155. DUMÉRIL, C. Bruche, genre d'insectes coléoptères... (In: *Dictionnaire des sciences naturelles... par plusieurs professeurs du Jardin du Roi, et des principales écoles de Paris*. Strasbourg: F. G. Levrault; Paris: Le Normant, 1817. 8°. tome 5, p. 371-374.) OEA

Bruchus pisorum cited as a book pest by Paul Jacob (pseudonym for Paul Lacroix). Remarks reprinted by Rouveyre but doubted by Houbert who cites this dictionary for a description of the insect. Duméril states that this insect is common in many places in France and is also found in Pennsylvania.

156. DU RIEU, WILLEM NICOLAAS. Bohrwurmtod. (Centralblatt für Bibliothekswesen. Leipzig, 1884. 8°. Jahrg. 1, p. 260, 428.) * HA

Question and answer. Use of "Fleckenwasser" (Benzin) recommended which though allowed to soak into the book leaves no stain. Used at the University of Leyden.

157. LES ENNEMIS des livres: histoire naturelle, leur constitution, leurs ravages, les moyens de s'en préserver. illus. (Magasin pittoresque. Paris, 1878. 4°. année 46, p. 146-149.) † DM

The greater part of the article is translated as "Enemies of books; their natural history, their ravages, the methods of destroying them," in *Scientific American supplement*, New York, v. 6, no. 138, p. 2200-2201, illus., and extra illus. on p. 2282, † V4. One of a series of articles on the enemies of books, the others do not apply here. American cockroach, *Anobium hirtum* and *pertinax*, *Ptinus molle*, *Ptinus fur*, and the Traça of Brazil.

158. F., J. T. Bookworms [alive]. (Notes and queries. London, 1884. 8°. series 6, v. 10, p. 473.) * R-* DA

A note on the discovery of live bookworms. Answers: 1885, v. 11, p. 344, Este [pseud.?] gives letters from Richard Savage and John Marshall on discoveries of live bookworms; v. 11, p. 455, L. L. K. regrets lack of knowledge. Savage's letter on the discovery of a live bookworm is reprinted as "A bookworm" in *Library journal*, New York, 1885, v. 10, p. 131-132, * HA. Translation of Savage: "Ein lebender Büchernwurm" in *Papier-Zeitung*, Berlin, 1885, Jahrg. 10, p. 1596.

159. FABBRONI, GIOVANNI VALENTINO MATTIA. Lettera di Giovanni Fabbroni a Pomilio Pozzetti delle Scuole Pie sulla maniere di preservare e di restaurare i libri danneggiati, e di costruire biblioteche. (Società italiana delle scienze. Memorie di matematica e di fisica. Modena, 1804. 4°. tomo 11, p. 92-122.) * ER

Describes the ravages of insects, particularly the *Dermestes*, the larva of "Efemere," and the white ant, giving the kinds of wood to be used in the library, the methods of treating infested wooden shelving, and the methods of treating the books and bookbinding paste. The latter part of the article is a relation of the secrets of Pietro Catti concerning illuminating, gilding and cleaning, etc., of books.

160. FELT, EPHRAIM PORTER. *Lepisma domesticum*, Packard. illus. (New York State.—Entomologist. Report on the injurious and other insects of the state of New York. Albany, 1898. 8°. no. 14, p. 216-218.) QIQ

Description of habits and damage to books.

161. FITZGERALD, PERCY HETHRINGTON. The book fancier; or, The romance of book collecting. 2. ed., revised. London: Sampson Low, 1887. 312 p. 16°. * GAN

Short paragraph on p. 252 deplored the depredations of bookworms.

162. FLINT, WESTON. The croton bug as a library pest. (Library journal. New York, 1879. 8°. v. 4, p. 376-377.) * HA

Blatta germanica, its ravages and methods of control, especially by pyrethrum powder. Letter from C. V. Riley printed here.

Nineteenth Century, continued

163. G., F. N. Black beetles and borax. (Notes and queries. London, 1873. 8°. series 4, v. 11, p. 302.) * R-* DA

States that the old monks used borax as a red pigment on the edges of books to keep the beetles away. Answer: v. 11, p. 392. U. O. n., P., and Medweig point out that borax is not a pigment and that there were no cockroaches in England at the time of the monks.

GARMAN, SAMUEL, joint author. See GREEN, SAMUEL A., AND SAMUEL GARMAN.

164. GARNETT, RICHARD. Preface to Blades' "Enemies of books." (In his: Essays in librarianship and bibliography. London: Allen, 1899. 12°. p. 283-287.) * HD

Library series, edited by Dr. Richard Garnett, v. 5. Reprint of his preface to Blades, 1896 edition. Statement made that "Bookworms in this favoured country [England] are now nearly as extinct as wolves."

165. GATTY, MARGARET (SCOTT). Knowledge not the limit of belief. (In her: Parables from nature by Mrs. Alfred Gatty. New York: James Pott, 1903. 12°. part 1, p. 42-57.) PQF

A moral essay concerning a bookworm, a zoophyte, and a seaweed engaged in an imaginary conversation in a naturalist's library. The first edition of the first series of the Parables was printed in London by Bell, 1855. No copy located.

166. GÉRAUD, HERCULE. Essai sur les livres dans l'antiquité particulièrement chez les Romains. Paris: Techener, 1840. 232 p. 8°. * I

On p. 103-104 there are quotations and references to the use of cedar oil by the Romans.

167. GILLET DE LAUMONT, FRANÇOIS PIERRE NICOLAS. Rapport fait par M. Gillet de Laumont, au nom du Comité des arts économiques, sur les reliures perfectionnées de M. Lesné. (Société d'encouragement pour l'industrie nationale. Bulletin. Paris, 1818. 4°. année 17, p. 182-185; discussion, p. 185-186.) 3-VA

Records improvements including an insect-proof leather and other methods of defeating the worms. The discussion is largely taken up with the subject of bookworms.

168. GILLET DE LAUMONT, FRANÇOIS PIERRE NICOLAS. Rapport fait par M. Gillet-Laumont au nom du Comité des arts économiques, sur les reliures en carton vernis de M. Bertin. (Société d'encouragement pour l'industrie nationale. Bulletin. Paris, 1811. 4°. année 10, p. 304-306.) 3-VA

Additional details in année 10, p. 318, and année 11, p. 57.

Abstract in "Bulletin des Neuesten und Wissenschaftlichsten aus der Naturgeschichte der Künste und Gewerbe." Berlin, 1813, Bd. 14, Heft 3. Substance also in Greve, which see. Citation for a prize for a binding which among other things had the property of repelling insects.

169. GIRARD, MAURICE. La domestication des blattes. illus. (Société d'acclimation. Bulletin. Paris, 1877. 8°. série 3, tome 4, p. 296-309.) VPA

The dissemination of the species throughout the world. Habits, including damage to books, by *Periplaneta americana*, *Periplaneta orientalis*, *Blatta germanica* and *Ectobius lapponica L.*

170. GOMME, ALICE BERTHA. Literary curiosities and notes edited by A. B. G. London: Elliot Stock, 1888. 349 p. 8°. (Gentleman's magazine library. [v. 8.] CAB (Gentleman's)

Reprints from articles on bookworms and the preservation of books on p. 40-44. Articles by C. John Smith, the third, A. Merrick, and one anonymous. See also note 10 on p. 318-320 giving an abstract of Westwood's 1879 paper and the poem of Thomas Parnell.

171. GOODIS, W. S. Bookworms. (Public libraries. Chicago, 1897. 8°. v. 2, p. 146.) * HA
Insect trouble in Florida and a plea for remedies.

172. GOOSE, THOMAS. Query, on preventing the ravages of the book-worm. (In: Technical repository containing practical information... [edited] by Thomas Gill. London, 1823. 8°. v. 3, p. 212-214.)

Records damage in his private library. The editor calls for assistance and Papyrus, pseud., answers on p. 275 recommending that corrosive sublimate be put in the paper pulp and in the hinder's paste and that the same be applied in solution of proof spirits to old books. Turpentine also recommended as a repellent.

173. GOUREAU, CHARLES. Les insectes nuisibles à l'homme, aux animaux et à l'économie domestiques. (Société des sciences historiques et naturelles de l'Yonne. Bulletin. Auxerre, 1866. 8°. v. 20, partie 2, p. 1-258.) * EN

Separately printed, Paris: V. Masson et Fils, 1866. 258 p. 8°. Scientific description, family characteristics, life history and habits with some remedies indicated. Many bookworms included but the author does not always accuse the insect of injuring books.

174. GRAFF, MECHANIC IN BERLIN. [Ein untrügliches Mittel gegen Bücherläuse.] (Entomologischer Verein zu Stettin. Entomologische Zeitung. Stettin, 1840. 12°. Jahrg. 1, p. 62-63.) QII

A solution of corrosive sublimate is applied to the shelves, not the books.

175. GREEN, SAMUEL A., AND SAMUEL GARMAN. [Bookworms.] (Massachusetts Historical Society. Proceedings. Boston, 1894. 8°. series 2, v. 8, p. 105-108.) IAA

Report of the meeting in "The ravages of book worms," *Science*, New York, 1893, v. 21, p. 158, OA. Abstract: "Ravages of bookworms" in *Library Journal*, New York, 1894, v. 19, p. 230-231, * HA.

Green referred to the buffalo bug as the chief culprits and read a letter from Garman in which *Lepisma saccharinum*, *Anthrenus varius* (or the buffalo hug) and a species of cockroach were described as injurious to books.

176. GREVE, ERNST WILHELM. Hand- und Lehrbuch der Buchbinde- [und Futteralmache-] Kunst. In Briefen an einen jungen Kunstverwandten... Berlin: Commission der Maurerschen Buchhandlungen, 1822-23. 2 v. 12°. * ITR

In v. 2, p. 268-274 the author recommends Bertin's oil varnish for insect-proofing the binding. He also includes some older remedies as vermouth, colocynth, pepper, lime, etc.

177. H. G. H. The bookworm [where to find illustrations]. (Notes and queries. London, 1876. 8°. series 5, v. 6, p. 49.) * R-* DA

Answers: v. 6, p. 96, J. Astley refers to illustrations of *Anobium striatum*. v. 6, p. 197, Charles W. Sutton refers to other illustrations of the above insect and of *Anobium pertinax*.

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178. HAGEN, HERMANN AUGUST. Insect pests in libraries. (*Library journal*. New York, 1879. 4°. v. 4, p. 251-254; discussion, p. 292.) * HA

See also * *Boston Morning Journal*, July 3, 1879, and * *Boston Daily Advertiser*, July 3, 1879. Abstract in "Journal of applied science and record of progress in the industrial arts", London, 1879, v. 10, p. 152. Reviewed in *Gardeners' chronicle*, London, 1879, series 2, v. 12, p. 340.

Historical summary of literature on bookworms and the damage caused particularly by *Anobium*, *Dermestes*, *Termites*, *Ptinus fur* and *Blatta orientalis*, etc., with remedies indicated.

179. HAGEN, HERMANN AUGUST. [Lepisma injuring books.] (Canadian entomologist. London, Ontario, 1886. 8°. v. 18, p. 180.) QII

Refers to damage to a shipment of books received at the Theological Seminary, Andover, Mass. Turkish morocco bindings said to be the most resistant.

180. HAGEN, HERMANN AUGUST. On a new library pest. (Canadian entomologist. London, Ontario, 1886. 8°. v. 18, p. 221-230.) QII

A Thursday Club address first reported in the * *Boston Evening Transcript*, March 13, 1886. German translation apparently in full: "Über eine neue Büchbergste" in *Entomologische Zeitung*, Stettin, 1886, Järg. 47, p. 270-277, QII. Short abstract therefrom in *Humboldt. Monatsschrift für die gesamten Naturwissenschaften*, Stuttgart, 1887, Jahrg. 6, p. 114-115, 3-OA. Same article though shorter from the * *Boston Weekly Transcript*: "On a new library pest" in *Library journal*, New York, 1886, v. 11, p. 184-187, * HA. For another abstract of the original article with additional material see Robert T. Jackson.

This article refers to *Lepisma domestica*, its injuries to labels on geological specimens, etc., and control measures. Not considered dangerously injurious when proper protective measures are taken. Termites also mentioned.

181. HAGEN, HERMANN AUGUST. The probable danger from white ants. (American naturalist. Boston, 1876. 8°. v. 10, p. 401-410.) PQA

Abstract: "Library pests" in *Science news*, New York, 1879, v. 1, p. 276-277, 3-OA. Translation of abstract: "Den Büchern schädlichen Insekten" in *Papier-Zeitung*, Berlin, 1879, Järg. 4, p. 870.

Including damage to the Illinois state papers and to a school library in South Carolina. Other insects mentioned.

182. HANKS, HENRY G. A California book worm. [San Francisco, 1897.] 4 p. unnumbered and plate. 8°. * HB p.v.32, no.6

A paper read at a meeting of the San Francisco Microscopical Society, June 16, 1897. Specimen unidentified but compared to Hooke's insect which has been conceded to be a species of *Lepisma*.

183. HANNETT, JOHN. *Biblioepedia; or, The art of bookbinding...* Fourth edition with considerable additions. London: Simpkin, Marshall and Co., 1848. 166 p. 16°. * ITR

The first edition was printed at London, 1835. Copies: DLC, ICJ. The 1848 edition was actually printed by the author at Henley-in-Arden.

See p. 157-158 for discussion of damage caused by *Aglossa pinguisinalis*, *Anobium pertinax* and *Anobium striatum*. Prediger's remedies given. The peculiar odor of Russia leather is said to be caused by a tanning constituent, empyreumatic oil obtained from the birch tree.

184. HESSE, LÉOPOLD AUGUSTE CONSTANTIN. *De la conservation des livres.* (In his: *Biblio-théconomie, ou nouveau manuel complet pour l'arrangement, la conservation et l'administra-*

tion des bibliothèques, par L. A. Constantin [pseud.]. Nouvelle édition. Paris: Roret, 1841. 24°. p. 63-68.) * HD Manuels-Roret.

First edition, Paris, 1839. Copies: DLC, NJN. Discusses humidity, rats, mice and insects and the methods of control. Parchment binding said not to be attacked by insects.

185. HORNE, THOMAS HARTWELL. Miscellaneous remarks on the preservation &c. of books. (In his: *An introduction to the study of bibliography...* London: Cadell and Davies, 1814. 8°. v. 1, p. 310-312.) * GAC

Ptinus fur and *Anobium mollis*. Remedies mostly taken from Prediger, Acbard, and Peignot.

186. HOUGH, WALTER. The preservation of museum specimens from insects and the effects of dampness. (United States National Museum. Report for the year ending June 30, 1887. Washington, D. C., 1889. 8°. p. 549-558.) * EA

Many insects injurious to books are also museum pests: various species of *Tinea*, *Anthrenus lepidus*, *Anthrenus varius*, *Sitodrepa panicea*, *Lepisma*, and *Trogoderma*. Poison formulas are given. Mention made of the use of vaseline to keep insects away from leather bound books.

187. How to preserve the leather bindings of books. (English mechanic and world of science. London, 1891. f°. v. 53, p. 320.) † VA

Letters from S. Bottone, N. Edwards-Robson, Frederick Davis, Sm., and Eos, pseud., giving various methods, such as poison varnish, oil of eucalyptus, naphthaline, camphor, Russia leather and beetle traps. Reprinted as "Preserving bindings" in *Library journal*, New York, 1892, v. 17, p. 72, * HA.

HOWARD, LELAND OSSIAN, JOINT EDITOR. See RILEY, CHARLES VALENTINE, AND LELAND O. HOWARD, EDITORS.

188. HOWARD, LELAND OSSIAN, AND OTHERS. The principal household insects of the United States... By L. O. Howard, C. L. Marlatt, and F. H. Chittenden. Washington, D. C., 1896. 130 p. illus. 8°. (United States Entomological Division. Bulletin. new series, v. 4.) QIQ

Including a full dozen insects mentioned for damage to books. Description, biology, parasites, and control measures.

189. HULME, E. WYNNDHAM. Insect book-pests: a review of recent literature [1877-1899]. (Library Association record. London, 1899. 8°. v. 1, p. 369-372.) * HA

Refers to the work of Mulsant, Blades, Hagen, O'Conor, Westwood, and others.

190. HUMBOLDT, ALEXANDER VON. *Essai politique sur le royaume de la Nouvelle-Espagne.* Paris: F. Schoell, 1811. 5 v. 8°. HTY

There are various editions. Translated by John Black, London, 1811, HTY (for the above reference see v. 4, p. 135). Spanish translation by Vicente G. Arnao, Paris, 1822, HTY (see v. 4, p. 178).

In tome 4 (livre 5, ch. 12), p. 482, Humboldt attributes the rarity of old books in equatorial America to the depredations of white ants, a frequently quoted statement.

191. JACKSON, ROBERT T. A new museum pest. (Science. New York, 1886. 8°. v. 7, p. 481-483.) OA

Giving the substance of Hagen's Thursday Club address with additions. *Lepisma* accused of eating labels in various museums, damaging books, maps, and photographs. Control measures indicated.

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JACOB, PAUL, PSEUD. See LACROIX, PAUL.

192. KIRBY, WILLIAM, AND WILLIAM SPENCE. An introduction to entomology. Sixth edition. London: Longman, 1843. 2 v. 8°. QIM. First edition, London: Longman, 1815-26. 4 v. Copy: NIP.

In the sixth edition, v. 1, p. 204-210 there is a discussion of various insects injurious to books and museum specimens, including a species of cricket injurious to books in India.

193. KNIGHT, J. The bookworm. (Notes and queries. London, 1881. 8°. series 6, v. 3, p. 425.) * R-* DA

More imagination than truth about a moth that came in through the window.

194. KOOPS, MATHIAS. Historical account of the substances which have been used to describe events, and to convey ideas, from the earliest date to the invention of paper. London: Jaques and Co., 1801. 273 p. 2. ed. 8°. * KF

On p. 84-89 he gives a summary of the findings of Hermann and Fladd (the Göttingen prize essays, 1774), and a partial summary of the essays offered for the Cercle des Philadelphes' prize, 1785. Koop states that "...paper in North America [is] speedily damaged by dampness and insects." There is no mention of bookworms in the first edition of Koops, 1800. Short abstract: "The insect enemies of books," in *Library journal*, New York, 1886, v. 11, p. 484. * HA.

195. LACROIX, PAUL. Les mangeurs de livres. [Par] Paul Jacob [pseud.]. (Le Naturaliste. Paris, 1896. 4°. série 2, v. 10, p. 156-158.)

Cockroaches, *Anobium hirtum* and the South American Traças, habits, damage, and remedies.

196. LALANNE, LUDOVIC. Curiosités bibliographiques. Paris: Adolphe Delahays, 1857. 440 p. 16°. (Bibliothèque de poche.) * GAH

First edition, Paris: Paulin, 1845. Short notes on the preservation of books in ancient times, p. 23, and worms in books, p. 222.

197. LANG, ANDREW. The library. London: Macmillan, 1881. 184 p. 12°. * GAN

See chapter 2 on the library, which deals with the enemies of books. For bookworms see particularly p. 37-40 in which Lang gives some general precautions to be observed. Several literary references to the subject are noted.

198. THE LATE MR. BLADES AND BOOKWORMS. (Bookworm. An illustrated treasury of old-time literature. New York and London, 1890. 8°. v. 3, p. 272.) * GAA

Concerning an unidentified bookworm and a letter of William Blades to F. Graham Aylward.

199. LEIGHTON, JOHN. On buckram as a binding material. (Conference of Librarians, London, 1877. Transactions and proceedings... London: Trübner and Co., 1878. 4°. p. 168-169.) * HA (International)

As an aid to the durability of buckram it is recommended that colocynth or bitter apple be mixed with the paste as an insect deterrent.

200. LEIGHTON, JOHN. On the library, books, and binding, particularly with regard to their restoration and preservation. (Society of Arts. Journal. London, 1859. 8°. v. 7, p. 209-215.) VA (Royal)

Page 212 is devoted to the ravages of insects and remedies. Cockroaches said to be a scourge in China.

201. L'HERMINIER, FÉLIX LOUIS. Observations sur les habitudes des insectes de la Guadeloupe. (Société entomologique de France. Annales. Paris, 1837. 8°. série 1, tome 6, p. 497-513.) QII

The manuscript was written at the request of the government in 1822. A short extract from the manuscript was published in 1833: "Sur les insectes déestructeurs de la Guadeloupe," in *L'Institut*, Paris, 1833, tome 1, no. 8, p. 62-63; cf. Hagen, *Bibliotheca entomologica*, Leipzig, 1862, v. 1, p. 360. An abstract from *L'Institut* appeared in *Isis von Oken*, Leipzig, 1837, [v. 30], Heft 4, col. 310-311. A more detailed extract, this time from the Société entomologique, appeared in *Isis von Oken*, Leipzig, 1848, [v. 41], Heft 6, col. 463-467.

All extracts and abstracts deal with *Dermestes chinensis*, its damage to books and remedies. The latter abstract also notes the damage done to books by termites. The remedies for *Dermestes chinensis* include a mercurial salve, corrosive sublimate, camphor, petroleum and musk. Hagen in his bibliography in the *Library journal*, v. 4, p. 374, adds the following note: "W. F. Erickson in (*Wiegmann's Archiv für Naturgeschichte*, Berlin, 1838, Jahrg. 4, Bd. 2, p. 206, POA, remarks that *Dermestes chinensis* is the well-known *Anobium panicum*, and to this beetle cannot belong the larva described by L'Herminier. Therefore his insect is still unidentified."

202. LIMNER, LUKE. The book-worm and its ravages. (Notes and queries. London, 1855. 8°. [series 1], v. 12, p. 427.) * R-* DA

Russia leather ineffectual. Regrets so little known on subject. Answers: v. 12, p. 474, a tale of woe by J. F. M., with a description of an adult insect. Margaret Gatty obtains information from the British Museum. And 1856, series 2, v. 1, p. 143, W. D. Macray finds eighty worms in a ten-volume set. v. 1, p. 244. Edward Peacock gives remedy from a review of Hannett's hook. v. 1, p. 360, Luke Limner intimates that tests of leathers and remedies will be conducted. Edward F. Rimbault gives extracts from the *Gentleman's magazine* and Dibdin's *Bibliographical Cameron*.

203. LINTNER, JOSEPH ALBERT. *Sitodrepa panicula* Linn., as a leather-beetle. illus. (New York State.—Entomologist. Report on the injurious and other insects of the state of New York. Albany, 1888. 8°. no. 4, p. 88-93.) QIO

Same in New York State.—Museum of Natural History, *Annual report for 1887*, Albany, 1888, v. 41, p. 208-213. * F.

Damage to shoes thought to be caused by *Dermestes vulpinus* but turned out to be caused by *Sitodrepa panicula*. Gives an account of its omnivorous habits including damage to books. *Pinus brunnescens* also cited for book damage. References to scientific literature given.

204. LOEVINSON, ERMANNO. Sua provvedimenti atti ad impedire il deterioramento della carta negli scritti e negli stampati. (Società bibliografica italiana. Bollettino. Milano, 1898. 8°. v. 1, p. 135-140.)

The government's part in protecting worthy material from deterioration through the ravages of insects, humidity, etc.

205. LUCAS, HIPPOLYTE. La Forbicine de Geoffroy ou le *Lepisma saccharina*. (Société entomologique de France. Bulletin entomologique. Paris, 1868. 8°. série 4, tome 8, p. xxii-xxiii.)

Bound with the society's *Annales*, 1868. QII
Including the ravages of this insect in houses, museums, and libraries.

206. MACCULLOCH, JOHN. On the use of perfumes in preventing the formation of mouldiness. (Edinburgh philosophical journal. Edinburgh, 1823. 8°. v. 8, p. 33-36.) OA

Reprinted in *Technical repository containing practical information...[edited]* by Thomas Gill, London,

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1823, v. 3, p. 76-79. French translation: "De l'usage des substances aromatiques pour prévenir la moisissure" in Société d'encouragement pour l'industrie nationale, *Bulletin*, Paris, 1823, année 22, p. 137-138, 3-V4; "Emploi des parfums contre la moisissure" in *Revue britannique*, Paris, 1825, tome 2, p. 385-388, *DM.

Includes a variety of aromatic substances. Russia leather is durable on account of the oil of birch used in tanning. Discusses preservatives for binder's paste. Corrosive sublimate in the paste as an insect repellent.

207. * MAIRE, ALBERT. Le livre, ses amis, ses ennemis, conférence publique faite...le 9 mars 1888.... Clermont-Ferrand: G. Mont-Louis, 1888. 20 p. 8°.

Title from Bibliothèque Nationale catalogue. No copy located. cf. Wolfgang Meier reference no. 2261 in his *Bibliographie der Buchbinderei-Literatur*, Leipzig, 1925.

208. MAIRE, ALBERT. Manuel pratique du bibliothécaire.... Paris: Picard et fils, 1896. 591 p. 8°.

For insects damaging books see p. 93-94, 282, 293, 294-295, 321, 351-352, and 400. No definite control measures given, except searching individual books for possible worms and using certain kinds of wood in the library.

209. MANSFIELD, R. W. Report for the year 1887 on the trade of Swatow, China. London, 1888. 7 p. 8°. (Great Britain. Parliament. Sessional papers. 1888. v. c. Diplomatic and consular reports on trade and finance. Annual series. no. 304.) * SDD (Gt. Br. Parl.)

Abstract: "Destruction of books in China by insects" in *The Bookworm. An illustrated treasury of old-time literature*, London, 1888, v. 1, p. 284, *GAA.

On p. 5 of the report the acting consul states that there is "wholesale destruction of books in China by insects," and gives remedies recommended by a Dr. Hance: a thin spirit varnish as a deterrent to the cockroaches, and corrosive sublimate and creosote poison for the joints and the first and last few leaves.

MÄRLATT, CHARLES LESTER, JOINT AUTHOR. See HOWARD, LELAND OSSIAN, AND OTHERS.

210. MARSHALL, WILLIAM. Bücherfeinde unter den Kerbtieren. illus. (Deutscher Tierfreund. Leipzig, 1899. 8°. Jahrg. 4, p. 72-78.)

One of a series of articles: Charakterbilder aus der heimischen Tierwelt. Description of a number of insects injurious to books in Germany. States that poisons are of little use. Lime is recommended for use in the binding process.

211. MARTENS, GEORG VON. Erfahrungen, Beobachtungen und Versuche über die den Herbarien schädlichen Insekten. (Verein für vaterländische Naturkunde in Württemburg. Jahreshefte. Stuttgart, 1845. 8°. Jahrg. 1, p. 213-232.) PQA

Enumeration of various insects with damage caused and remedies, including several insects injurious to books, *Anobium panicum*, *Psocus pulsatorius*, *Anthonomus museorum*, *Ptinus fur*, etc.

212. MERRICK, A. [Remedy for bookworms.] (Gentleman's magazine, London, 1844. 8°. new series, v. 21, p. 596-597.) *DA

In the NN set called v. 175. Description of the beetle and larva of *Ptinus pertinax*.

Corrosive sublimate as a remedy.

Reprinted in Gomme, which see.

213. MOLBECH, CHRISTIAN. Von Erhaltung öffentlicher Bibliotheken, von schädlichen In-

sechten, vom Band der Bücher u. s. w. (In his: Ueber Bibliothekswissenschaft... nach der zweiten Ausgabe des dänischen Originals übersetzt von H. Ratjen... Leipzig: J. C. Hinrichs, 1833. 8°. p. 151-177.) *HD

Second Danish edition: Om offentlige Bibliotheker... Kjøbenhavn: Gyldendal, 1829. Copy: DLC. First Danish edition not recorded by Cbr. V. Brunn, *Biblioteca Danica*.

A good summary of bookworm knowledge up to that time, including Frisch, Prediger, Greve, Hermann, and others, with his own observations.

213A. MULSANT, MARTIAL ÉTIENNE. Les ennemis des livres par un bibliophile. Lyon: H. Georg, 1879. 64 p. 12°.

Two hundred copies of this collector's item were printed anonymously. Arnould Locard in his "Étienne Mulsant, sa vie, ses œuvres" (Académie des sciences, belles-lettres et arts de Lyon, *Mémoires. Classe des sciences*, Paris et Lyon, 1881, nouvelle série, tome 25, p. 369), *EO, calls it "une charmante plaquette humoristique, véritable petit trésor pour les bibliophiles."

E. Wyndham Hulme in his "Insect book pests" (*Library Association record*, London, 1899, v. 1, p. 369), *HA, states that Blades' work was inspired by this book.

It deals chiefly with the *Ptinidae* and methods of control including fumigation. Copy: NNC.

214. NAMUR, JEAN PIE. Des moyens pour préserver une bibliothèque des bêtes et des insectes. (In his: Manuel du bibliothécaire... Bruxelles: J. B. Tircher, 1834. 8°. p. 237-240.) *HD

Giving various remedies and the kinds of wood to be used for shelving.

215. NATURAL history of the bookworm. illus. (The Bookworm. An illustrated treasury of old-time literature. London, 1888. 8°. v. 1, p. 76-80.) *GAA

Extracts from Dibdin, Kirby, Blades, Lang, and in addition Hooke's illustration.

216. NAUMANN, ROBERT. Anzeigen... [By Robert Naumann.] (Serapeum. Leipzig, 1846. 8°. Jahrg. 7, p. 375.) *GAA

In reviewing a book the editor gives a remedy for bookworms consisting of the dried meal of wild chestnuts mixed with the binding paste.

217. A NEW bookworm. (The Bookworm. An illustrated treasury of old-time literature. New York and London [1889]. 8°. v. 2, p. 74.) *GAA

A short note on book damage by *Lepisma saccharina*.

218. NODIER, CHARLES. [Review essay on] Traité du choix des livres par M. Gabriel Peignot. (In his: Mélanges de littérature et de critique... mis en ordre et publiés par Alexandre Barginet, de Grenoble. Paris: Raymond, 1820. 8°. tome 2, p. 372-398.) NADB

This essay first appeared in the * *Journal des débats*, Paris, May 24, 1817, p. 3-4, and June 3, 1817, p. 3-4. It has been reprinted several times, one of them in *Bulletin du bibliophile*, Paris, 1877, année 44, p. 50-70, *GAA.

Only the latter portion of this article concerns bookworms. It contains the oft-quoted line "La bibliothèque des savans laborieux n'est jamais attaquée des vers." For earlier versions of this idea see Lucian, Isidore and Erasmus.

219. NÖLTING, OF RATZEBURG. [Mittel gegen den Bücherwurm.] (Neues Hannoverisches Magazin. Hannover, 1801. 12°. Jahrg. 10, Stuck 21, col. 331-332.) *DF

Cocculus and pepper.

Nineteenth Century, continued

220. O'CONOR, JOHN FRANCIS XAVIER. Facts about bookworms; their history in literature and work in libraries. New York: Harper, 1898. 87 p. illus. 12°. * HHL

Reviewed by Samuel H. Ranck in *Library journal*, New York, 1898, v. 23, p. 538, * HA. An article based on this book: "Insect foes of books. The bookworm past and present" appeared in *Scientific American monthly*, New York, 1920, v. 1, p. 496-500, * VA. Also reviewed by F. E. B. in *Nature*, London, 1898, v. 58, p. 435-436, OA; and extracts therefrom in *Society of Arts, Journal*, London, 1898, v. 46, p. 843-844, VA.

The first part is a review of the literary references, mostly Blades and Lang. The second part describes seven insects and the damage caused by them. The appendix consists of entomological notes by Spencer F. Baird on biological literature and illustrations, and by C. V. Riley on control measures. There were 750 copies printed. Quotes the poem of Evenus.

221. AN OLD BOOKWORM, PSEUD. Books and their worms. (The Bookworm. An illustrated treasury of old-time literature. New York and London [1889]. 8°. v. 2, p. 191-192.) * GAA
A literary essay on the insect and the human species.

222. PEIGNOT, ÉTIENNE GABRIEL. Des soins qu'exige une bibliothèque. (In his: *Traité du choix des livres...* Paris: Renouard; Dijon: Lagier, 1817. 12°. p. 277-280.) * GBO

Same in his *Manuel du bibliophile; ou Traité du choix des livres*, Dijon: Lagier, 1823, v. 2, p. 424-427, * GBO.

Mentions *Ptinus fur* and *Ptinus mollis*. Gives general advice on remedies including Prediger's. For review essay see Charles Nodier.

223. PEIGNOT, ÉTIENNE GABRIEL. Essai historique et archéologique sur la reliure des livres, et sur l'état de la librairie chez les anciens. Dijon: Victor Lagier; Paris: Jules Renouard, 1834. 84 p. illus. 8°. * ITE

Including Roman methods of protecting books from insects; see particularly p. 27-28, 34-36, 43.

224. PEIGNOT, ÉTIENNE GABRIEL. Insectes qui rongent les livres. (In his: *Dictionnaire raisonné de bibliologie...* Paris: Villeir, 1802. 8°. v. 1, p. 316-317.) * GAC

States that these insects belong to the *anthrenus* group which are injurious to natural history collections. Gives various remedies and quotes from Duchesne's *Dictionnaire de l'industrie* which includes Prediger's remedies. In a footnote Peignot tells the famous story of finding twenty-seven volumes in a row pierced by a bookworm in one continuous devastating journey.

225.* PERRIS, ÉDOUARD. Larves de coléoptères. Paris: Deyrolle, 1877. 590 p.

Title from Bibliothèque Nationale catalogue. Copies: DA, ICJ. Referred to by Houlbert for record of damage to books by *Anobium hirtum*. See p. 246 in Perris.

226. PERRIS, ÉDOUARD. Les oiseaux et les insectes. (Société royale des sciences de Liège. Mémoires. Liège, 1873. 8°. série 2, tome 3, p. 673-730.) * EM

See p. 686-687 for the destruction of books by *Anobium*. Speaking of cockroaches Perris mourns the fact that "we have not yet discovered a nocturnal and domestic bird which is able to deliver us from these troublesome parasites," p. 697.

227. PETZHOLDT, JULIUS. Was ist hinsichtlich der Mittel gegen Bücherwürmer und Insekten zu erwähnen. (In his: *Katechismus der Biblio-*

thekenlehre... Dritte, neu durchgesene Auflage. Leipzig: J. J. Weber, 1877. 16°. p. 153-155.) * HD

First edition, Leipzig, 1856. Copy: NJN.

Recommends turpentine and camphor on the shelves and cedar oil on the books.

228. PHILLIPS, SIR THOMAS. A simple method of destroying insects which attack books and mss. (British Association for the Advancement of Science. Report of the seventh meeting, 1837. Notices and abstracts of communications. London, 1838. 8°. v. 6, p. 99.) * EC

Abstract with discussion in *Athenaeum*, London, 1837, no. 516, p. 671-672, * DA. Reprint with discussion: "Insects in books" in *Book-lore*, London, 1884, v. 1, p. 13-14, * GA. And thence a short abstract in *Centralblatt für Bibliothekswesen*, Leipzig, 1885, Jahrg. 2, p. 35-36, * HA.

Anobium sibiricum trapped by allowing them to lay their eggs in their favorite wood, beech, then burn the wood. *Tomicus* and *Curculionidae* mentioned. Corrosive sublimate to be used in the binding paste. The discussion of this paper is not found in the reports.

229. PLATT, WILLIAM. The bookworm. (Notes and queries. London, 1881. 8°. series 6, v. 4, p. 34.) * R-* DA

Four species of bookworms with references to literature.

230. POEY Y ALOY, FELIPE. El anobio de las bibliotecas. illus. (In his: *Memorias sobre la historia natural de la isla de Cuba...* Habana: Imprenta de Barcina, 1851. tomo 1, p. 228-235, 441, pl. xxii, fig. 7-14, 17-21; tomo 2, p. 417.) QGS

Reprinted, with some omissions and without the illustrations in his *Obras literarias*, Habana: La Propaganda literaria, 1888. p. 54-59, NPW.

Professor Poey describes the ravages and habits of an insect which he called *Anobium bibliothecarum*. Hagen in his bibliography in 1879 had not been able to identify the species. For further discussion of identity see Magalhães.

231. POWER, JOHN. Handy-book about books, for book-lovers, book-buyers, and book-sellers. London: John Wilson, 1870. 217 p. 8°. * I

See p. 46, 130-132 for remedies and for anecdotes from *Notes and queries*.

232. POZZETTI, POMPILIO. Pensieri sopra un particolare insetto nocivo ai librai ed alle carte, e sopra i mezzi da usarli per liberarne le biblioteche. (Società italiana delle scienze. Memorie di matematica e di fisica. Verona, 1809. 4°. tomo 14, parte 2, p. 92-100.) * ER

Papers of Fabroni, Hermann, Giovene, Frey, and others are cited. Discusses *Lepisma saccharinum*, *Ptinus pertinax*, *Dermestes paniceus* and *Phaloena bibliothecaria* with various remedies. Gives remedies of Beccour the apothecary. Papers of Giovene and Frey not found.

233. PRESERVING books from insects. (Directory of second-hand booksellers, and list of public libraries, British and foreign. Edited by James Clegg. Rochdale: James Clegg, 1891. 12°. [v. 3], p. 301.) * IAA (International)

Remedies such as wiping the books with a dry cloth previously soaked in alum, or flannel in which white birch bark has been kept.

234. R., G. Bücherinsekten und Ankämpfung gegen dieselben. (Papier-Zeitung. Berlin, 1880. 4°. Jahrg. 5, p. 482.)

A short note on leather and a suggestion that rubber replace leather for binding.

Nineteenth Century, continued

235. REAL bookworms. (The Bookworm. An illustrated treasury of old-time literature. London, 1893. 8°. [v. 6,] p. 8.) * GAA
An unidentified white worm in a cocoon found by a Mr. Benjamin of New York.
236. RILEY, CHARLES VALENTINE. Some insect pests of the household: cockroaches. (United States.—Division of Entomology. Insect life. Washington, D. C., 1890. 8°. v. 2, p. 266–269.) QIQ
Reprinted with additions from an article of the same title in *Good housekeeping*, Holyoke, Mass., 1889, v. 9, no. 3, p. 53–54. Description, ravages and remedies for *Periplaneta americana*, *Periplaneta orientalis*, and *Phyllodromia germanica*. Records damage to the Treasury files in Washington.
237. RILEY, CHARLES VALENTINE, AND LELAND O. HOWARD, editors. Further injury in the Treasury by roaches. (United States.—Division of Entomology. Insect life. Washington, D. C., 1888. 8°. v. 1, p. 190–191.) QIQ
Records the control measures adopted.
238. RILEY, CHARLES VALENTINE, AND LELAND O. HOWARD, editors. Injury done by roaches to the files in the Treasury at Washington. (United States.—Division of Entomology. Insect life. Washington, D. C., 1888. 8°. v. 1, p. 67–70.) QIQ
Recording damage by the croton bug and the American cockroach.
239. RINGWALT, JOHN LUTHER. Book-worm. (In his: American encyclopaedia of printing. Philadelphia: Menamin & Ringwalt [etc.], 1871. 4°. p. 77.) * IPB
Erroneous paragraph confusing the boring kind of bookworm with Hooke's bookworm (the *Lepisma*). Notes that there is one book in a Philadelphia private library perforated by a bookworm.
240. * ROCKLIFF, ROBERT. Versicles from the portfolio of a sexagenarian [Robert Rockliff]. London [printed in Liverpool], 1862. 16°.
Later edition, London, 1873. 8°. Titles from the British Museum Catalogue. No copy located. This volume contains a poem beginning "What is a book-worm?" The poem is reprinted in *Book-lore*, London, 1886, v. 3, p. 109. * GAA, and in the *Popular science monthly*, New York, 1899, v. 55, p. 240. * DA.
241. ROUVEYRE, ÉDOUARD. Moyens de préserver les livres des insectes. illus. (In his: Connaissances nécessaires à un bibliophile. 5. ed. Paris: Édouard Rouveyre, 1899. 8°. v. 8, p. 23–46.) * HD
First edition, Paris: Rouveyre, 1877, p. 35–48, * HD.
The editions vary in the amount and detail of material included. The fifth edition contains a generous article on the literature, insects and remedies. Cites and quotes many authors from Prediger to Albert Mairé.
242. ROUVEYRE, ÉDOUARD. Réparation des piqûres de vers. (In his: Connaissances nécessaires à un bibliophile. 5. ed. Paris: Édouard Rouveyre, 1899. 8°. v. 8, p. 165–167.) * HD
First edition, Paris: Rouveyre, 1877, p. 75, * HD.
Repair of worm-holes.
243. SCIIRETTINGER, MARTIN. Handbuch der Bibliothekswissenschaft... Wien: Fr. Beck'schen Universitäts-Buchhandlung, 1834. 187 p. 8°.
This work is a condensation of his * *Versuch eines vollständigen Lehrbuches der Bibliothekswissenschaft*,
- München: Im Verlage des Verfassers, 1808–29. 4 v. 8°. Copy in 2 v. DLC. On p. 4 and 5 there are general recommendations on the protection of the library from animal and insect attacks, the chief idea being cleanliness.
- SCHUCKARD, WILLIAM E., JOINT AUTHOR. See SWAINSON, WILLIAM, AND WILLIAM E. SCHUCKARD.
244. SCHWARZ, E. A. An imported library pest. (United States.—Division of Entomology. Insect life. Washington, D. C., 1895. 8°. v. 7, p. 396–398.) QIQ
Nicobium hirtum found at Baton Rouge and at St. Charles College, Grand Coteau, La. Description and remedies.
245. SCUDDER, SAMUEL HUBBARD. [On the habits of *Tomicus eruditus* and damage in the Boston Athenaeum.] illus. (Boston Society of Natural History. Proceedings. Boston, 1864–66. 8°. v. 10, p. 13–14.) PQA
H. A. Hagen compared this with Westwood's article in the *Transactions of the Entomological Society of London*, but believed that the injury described by Scudder probably belonged to *Anobium paniceum*.
246. SHIMER, HENRY. Bookworms. illus. (American entomologist and botanist. St. Louis, Mo., 1870. 4°. v. 2, p. 322–324.) QII
Book pests in America. Describes the ravages of *Ptinus brunneus*, *Sitodrepa panicea*, *Carpocapsa pomonella*, *Aglossa pinguinalis*, *Celestus eruditus*, and *Fscus domesticus*, with a note on white ants.
247. SMITH, HERBERT HUNTINGTON. Brazil, the Amazons and the coast... New York: Scribner, 1879. 644 p. 8°.
Note on white ants and their destructive habits in the house, including damage to books, p. 312. HFY
248. SMITH, JOHN, the third, of St. John's College. [The book-worm.] (Gentleman's magazine. London, 1819. 8°. v. 89 [new series, v. 12], part 2, p. 135–136.) * DA
NN set labelled v. 126.
The capture and description of two bookworms. Reprinted in Gomme, which see.
- SPENCE, WILLIAM, JOINT AUTHOR. See KIRBY, WILLIAM, AND WILLIAM SPENCE.
249. STEEL, THOMAS. A remedy for bookworms. (Nature. London, 1899. 4°. v. 59, p. 439–440.) OA
A brief letter from Sydney, Australia, on the use of shellac for the protection of bindings against the ravages of silverfish and cockroaches.
250. SWAINSON, WILLIAM, AND WILLIAM E. SHUCKARD. On the history and natural arrangement of insects. London: Longman, 1840. 406 p. 12°.
Mr. Shuckard on p. 357–358 states that the book-louse, *Atrypos*, either eats the paste or feeds on the fungi. The holes are made by *Anobium*. Copies: DLC, ICL, NNM.
251. SYLVESTER, JAMES JOSEPH. The laws of verse; or, Principles of versification exemplified in metrical translations... London: Longmans, 1870. 152 p. 12°. NAEF
The oft-quoted passage about "the creature wriggling on the learned page" occurs in the footnotes of the presidential address to the mathematical and physical section of the British Association at Exeter, p. 113.

Nineteenth Century, continued

252. T. A new book-destroyer. (Notes and queries. London, 1869. 8°. series 4, v. 3, p. 192.)

* R-* DA

Unidentified insect that eats into the book from the three open sides (top, side edge and bottom) never penetrating beyond the margins of the pages.

253. * TASCHENBERG, E. L. Was sind Holzwürmer und wie erwehrt man sich ihrer? Halle: Knapp, 1883. 40 p. 8°.

No copy located. cf. Mejer no. 2274.

254. TISSANDIER, GASTON. Moyens d'empêcher des livres d'être atteints de piqûres. (In his: Recettes et procédés utiles. Huitième édition. Paris: G. Masson [1896]. 16°. p. 113-114.)

3-VBA

Petite bibliothèque de la "Nature." no. 1. Recommends turpentine, benzine, camphor, tobacco, phenic acid, and pyretheum powder.

255. TRAHERNE, LLEWELLYN E. The book-worm. (Notes and queries. London, 1881. 8°. series 6, v. 4, p. 34.)

* R-* DA

The silverfish, a pest in South Africa.

256. TROUSSET, JULES. Un million de recettes. Grande encyclopédie illustrée d'économie domestique et rurale... Paris: Arthème Fayard, 1875. 2 v. 8°.

VSB

See v. 1, p. 475 under the caption Bibliothèque. The Aglossa said to lay its eggs in the leather backs of books or in the dust. Remedy: use and dust the books.

VILLOISON, JEAN BAPTISTE GASPARD D'ANSSE. See ANSSE DE VILLOISON, JEAN BAPTISTE GASPARD D'.

257. W., B. Book-worm. (Notes and queries. London, 1855. 8°. [series 1], v. 11, p. 167.)

* R-* DA

Remedies desired given by the editor with references to other sources.

258. WATSON, WILLIAM S. Syrian book-worms. (United States.—Division of Entomology. Insect life. Washington, D. C., 1894. 8°. v. 6, p. 265-266.)

QIQ

Correspondence concerning a tinead larva and another insect "smer-keh," probably *Lepisma* sp.

259. WESTWOOD, JOHN OBADIAH. Description of a minute coleopterous insect, forming the type of a new subgenus allied to *Tomicus*, with some observations upon the affinities of the *Xylophaga*. illus. (Entomological Society of London. Transactions. London, 1836. 8°. v. 1, p. 34-36, pl. vii.)

QII

The small beetle, *Hypothenemus eruditus*, had destroyed the cover of a book of pasteboard and paste, both of which materials were consumed. Mr. Lumley, the owner, did not know from what quarter he received the book. Count J. A. Ferrari, in his work, "Die Forst- und Baumzucht schädlichen Borkenkäfer, Wien, 1867, p. 7, supposes that *H. eruditus* was imported with the book, and probably identical with *Bostriochus ruficollis* F. from Brazil. In Gemminger and Harold, "Catalonus Coleopterorum," 1872, v. 9, p. 2679, the patria of *H. eruditus* is said to be unknown, and Dr. John L. LeConte in his work "The Rhynchophora of America north of Mexico," 1876, p. 442, says that no specimens are found in those countries.—Hagen's note.

260. WESTWOOD, JOHN OBADIAH. On the insects which injure books. (British Association

for the Advancement of Science. Report of the forty-ninth meeting. London, 1879. 8°. v. 49, p. 371-372.)

* EC

Reprinted: "Insects in the library" in "Gardeners' Chronicle," London, 1879, v. 46 [new series, v. 12], p. 340. Abstract: "Insects which injure books" in "Zoologist," London, 1879, series 3, v. 3, p. 430, QGA.

Records damage done by *Aglossa pinguinalis*, *Depressaria* sp., *Lepisma saccharina*, *Blatta orientalis*, *Anobium pertinax*, and *Anobium striatum*, and termites. Gives various methods of fumigation. Describes an experiment in which the infested books were put in bell-glass jar and the air exhausted.

261. WESTWOOD, JOHN OBADIAH, AND H... Caterpillars found in a book. illus. (Magazine of natural history. London, 1832. 8°. v. 5, p. 109-110, 206.)

PQA

Letter from H... and answer by Westwood, who called it *Odynerus parietinus*.

262. WHAT is a bookworm? (Book-lore. London, 1886. 8°. v. 3, p. 108-111.)

* GAA

Several injurious insects described, some remedied given, ending with a poem of Thomas Parnell's.

263. WIE man Bücher vor dem Bücherwurme sichern kann. (Dingler's polytechnisches Journal. Stuttgart, 1823. 8°. Bd. 11, p. 245.)

3-† VA

Apparently an answer to the Thomas Goose query, which see. It is advocated that the infested books be taken completely apart, cleaned thoroughly and re-bound using poisons in the paste. In addition a wax paper slip-cover, poisoned with mercury, may be applied over the binding.

264. WINSOR, JUSTIN. Library pests. (Library journal. New York, 1879. 4°. v. 4, p. 448-449.)

* HA

General remarks on Westwood's and Hagen's papers.

265. WOOD, WILLIAM. The great cockroach. illus. (In his: Zoography; or, The beauties of nature displayed... Illustrated with plates designed and engraved by Mr. William Daniell. London: Cadell and Davies, 1807. 4°. v. 2, p. 300-302.)

PQD

Damage to books, paper and clothing in the West Indies by *Blatta gigantea*. Said also to attack human beings. Many bookworms described in this set but book damage seldom mentioned. Many books similar to Wood have been omitted from this bibliography. This item included for its rather terrifying description of the voracious cockroach.

266. WOODS, JAMES C. The book-worm. (The Bibliographer. London, 1884. 8°. v. 6, p. 1.)

* GAA

Poetry.

267. ZAEHNSDORF, JOSEPH WILLIAM. Insects. (In his: The art of bookbinding, a practical treatise. London: Bell and Sons, 1897. 3. ed. 16°. p. 166-169.)

* ITR

First ed., London, 1880. Zahnsdorf's remedies given in American dictionary of printing and bookmaking. New York: Howard Lockwood & Co., 1894, p. 63, * IPB.

Hypothenemus eruditus, *Anobium striatum*, and *Dermestes* sp. may be defeated by using poison paste in the binding and by the use of certain kinds of wood for shelves. Other remedies given.

268. ZOLLER, EDMUND. Die Bibliothekswissenschaft im Umriss. Stuttgart: Julius Weise, 1846. 72 p. 16°.

On p. 53 there are several old-fashioned remedies for bookworms and general advice on the subject derived from the Göttingen Preisschriften, Molbech, and Constantin. Copy: DLC.

TWENTIETH CENTURY

(Including the year 1900 for convenience of reference)

269. A. Papierfeinde. illus. (Wochenblatt für Papierfabrikation. Biberach, 1909. Jahrg. 40, Nr. 33, p. 2813.) Description and illustration of an unnamed insect that leaves red spots on the paper.
270. ACLOQUE, A. Les blattes. (Cosmos. Revue des sciences et de leurs applications. Paris, 1912. 4°. nouv. série, tome 67, p. 680-682.) VA *Blatta orientalis* and *Blatta americana*. General article on the cockroach scourge throughout the world, including damage to books.
271. ACLOQUE, A. Les insectes bibliophages. illus. (Cosmos. Revue des sciences et de leurs applications. Paris, 1913. 4°. nouv. série, tome 68, p. 205-207.) VA Abstract: "Bookworms of various sorts" in *Review of reviews*, New York, 1913, v. 47, p. 619-620, * D.A. General article on the most common of the book pests. *Clothilla pulsatoria* and *Sirex gigas* also mentioned.
272. ADAM, PAUL. Das Restaurieren alter Bücher... Halle, Saale: Knapp, 1927. 28 p. 8°. Includes repair of worm-holes and worm-eaten bindings, particularly p. 19-21, 24-26.
273. ADKIN, ROBERT. *Borkhausenia pseudospretella* Stt., attacking bookbindings. (The Entomologist's monthly magazine. London, 1932. 8°. series 3, v. 18, p. 40-41.) Records damage to leather bindings.
274. ANDERSON, JAMES. A real live bookworm and how to fight him. (Publishers' circular and booksellers' record. London, 1915. 4°. v. 103 [new series, v. 52], p. 63.) †* GDD Several species, their habits and methods of control, mostly from J. F. X. O'Connor and C. V. Riley.
- ARCHER, JOHN, JOINT AUTHOR. See LYDEN-BERG, HARRY MILLER, AND JOHN ARCHER.
275. ARNEUDO, GIUSEPPE ISIDORO. Dizionario esegetico tecnico e storico per le arti grafiche con speciale riguardo alla tipografia. Torino: R. Scuola tipografica e di arti affini [1913-25]. 3 v. illus. 8°. * IPB See under various headings such as bibliofagia, disinfezione dei libri, insetti nocivi ai libri, nemici dei libri and under the family names of insects as Acciughina, Anobio, Dermestidi, etc. Illustrations and remedies.
276. ARNEUDO, GIUSEPPE ISIDORO. I nemici e gli amici della carta. illus. (Le Vie d'Italia. Milano, 1922. 8°. anno 28, p. 599-603.) BWA Illustrations of fourteen insects, and various methods of control. Taken from his *Dizionario*.
277. AUSTEN, ERNEST EDWARD, AND A. W. MCKENNY HUGHES. Clothes moths and house moths; their life history, habits and control. London: British Museum, 1932. 56 p. illus. 8°. (British Museum. Natural History Department. Economic series. no. 14.) PQA Contains the life history and means of control of *Borkhausenia pseudospretella*. Also mentions the findings of R. N. Chrystal and Robert Adkin relating to the attacks of this species upon bookbindings.
278. * AVERIN, V., AND A. NOVINENKO. A contribution to the problem of the control of pests in archives. [In Ukrainian.] illus. (Kharkiv. Kr. sil'sko-gospodars'ki stantz. Entomological Dept. Kharkov, 1928. [Publication] no. 9, p. 1-7.) Records damage to books and documents in Kharkov in 1927 by the larvæ of *Sitodrepa panicea*. Control measures indicated.
279. BACHMANN, E. Bücherwürmer mit acht Illustrationen nach Aufnahmen und Zeichnungen. (Reclams Universum. Leipzig, 1913. 4°. Jahrg. 29, Halbbd. 1, p. 127-131.) * DF Description and habits of the drug-store beetle, larder beetle, oriental cockroach, German cockroach, book-louse and its enemy the book scorpion, and the silverfish. Illustrations of insects and damage to books.
280. BACK, ERNEST ADNA. Book lice, or Psocids. Washington, D. C., 1920. 4 p. illus. 8°. (United States. Department of Agriculture. Farmers' bulletin. no. 1104.) VPZ "A popular account of these pests with remedial measures when infestation is serious." — Colledge.
281. BACK, ERNEST ADNA. The silverfish as a pest of the household. Washington, D. C., 1931. 5 p. illus. 8°. (United States. Department of Agriculture. Farmers' bulletin. no. 1665.) VPZ Habits, life history, and control methods. Illustrations of damage to books and paper.
- BACK, ERNEST ADNA, JOINT AUTHOR. See WEBER, CHARLES GOULD, AND OTHERS.
282. BALLOU, HENRY ARTHUR. Book protection. By H. A. B. (Tropical agriculture. Trinidad, 1926. 4°. v. 3, p. 212-213.) VPA Methods of protecting books from insects in Trinidad, the Barbados, and the West Indies in general. Beetles, cockroaches, silverfish, termites and mud-wasps. Variability in immunity of books and paper depending on country of origin. Remedies given, particularly R. R. Hall's arsenic solution.
283. BALLOU, HENRY ARTHUR. Insect pests of the Lesser Antilles. Bridgetown, Barbados: Advocate Co., 1912. 210 p., 185 figs. 12°. (Great Britain. Imperial Department of Agriculture for the West Indies. Pamphlet series. no. 71.) VPW Pages 142-154, damage to books by cockroaches, silverfish, the cigarette beetle (*Lasioderma serricorne*), the drugstore beetle (*Sitodrepa panicea*) and apparent damage by the house cricket (*Amphiacusta caribea*). Pages 167-168, formula and method of application of a solution to be applied to the books.
284. BANKS, NATHAN, AND THOMAS E. SNYDER. A revision of the Nearctic termites by Nathan Banks with notes on the biology and geographic distribution by Thomas E. Snyder. Washington, D. C., 1920. 228 p. illus. 8°.

Twentieth Century, continued

(United States National Museum. Bulletin, no. 108.) * EA

General summary mentioning bookworm damage: "Termites of the temperate zone. A study of the American cousins of the African 'white ants'" with illustrations of damage in *Scientific American monthly*, New York, 1920, v. 2, p. 325-329, [†]V.A.

Damage to books and paper on p. 95, 149-150, and plate 26, particularly by *Reticulitermes flavipes*.

285. BARNARD, FRANK M. Some pernicious enemies of bindings; "bookworms"; bookworms I have known; insect enemies of books. (*Bookbinding magazine*. New York, 1928. 4°. v. 7, no. 4, p. 23-24, 52; no. 5, p. 30, 50; no. 6, p. 36, 42; v. 8, no. 2, p. 44, 46.) ^{†*}ITA

Discusses the most important of the seventy-two insects known to him. Gives formulas for poison paste and other remedies. Discusses the insect-proofing of bindings.

286. A BATTLE with bookworms. (Library journal. New York, 1932. 4°. v. 57, p. 389.) * HA

The results of the experiment with fumigation at the Henry E. Huntington Library, from its annual report. See under corporate entry for the series of annual reports.

287. BAUER, E. Bemerkungen zur Konserverung von Archivalien. (Archivalische Zeitschrift. München, 1905. 8°. N. F., Bd. 12, p. 156-170.) ELA

Control measures for humidity, temperature, light, dust, insects, bacteria, etc., with preservatives for paper and paste. The insect section is based on Houlbert.

288. BEADLE, CLAYTON, AND HENRY P. STEVENS. The destruction of paper in transit by insects. (World's paper trade review. London, 1912. 8°. v. 57, p. 1050, or no. 21, p. 6.) VMPA

Damage to packets of paper by the larvae of *Syrex gigas*, the giant-tailed wasp, once rare in Great Britain, but reported as comparatively common in 1912. Ordinarily this insect is a wood-borer, destructive to pines.

289. BEATTIE, WILLIAM RENWICK. The use of hydrocyanic acid gas for exterminating household insects. (United States. Division of Entomology. Bulletin. Washington, D. C., 1902. 8°. new series, no. 31, p. 81-85.) QIQ

The use of 0.10 grams per cubic foot in a closed room will kill all insects overnight. Chiefly directed against cockroaches.

290. * BERLESE, ANTONIO. Insetti delle case e dell'uomo e malattie che diffondono. Milano: Hoepli, 1917. 293 p. illus. 8°.

Copies: DA, ICJ.
This handbook includes brief notes on *Anobium*, *Lepisma*, *Psocids*, etc. — Colledge.

291. BIAGI, CARLO. Insetti nemici dei libri. (Rivista delle biblioteche e degli archivi. Firenze, 1903. 4°. anno 14, v. 14, p. 138-143.) * HA

Summary by Fernando Araujo: "Los insectos enemigos de los libros" in *La España moderna*, Madrid, 1904, año 16, número 184, p. 194-196, *DR. Partial summary: "Study of the hygiene of libraries" in *Public opinion*, New York, 1904, v. 36, p. 213, *DA, and from thence: "Insects injurious to books" in *Library journal*, New York, 1904, v. 29, p. 205, *HA.

Basing his article on Houlbert's prize essay, Biagi mentions the most important insects and the remedies,

mechanical, chemical, physical, and biological. Of the various methods of control, fumigation with carbon disulphide is the one most recommended.

292. BIRRELL, AUGUSTINE. Bookworms. (In his: In the name of the Bodleian, and other essays. New York: Charles Scribner's Sons, 1910. 16°. p. 38-47.) NCZ

Essay on bookworms, human and otherwise. Apparently inspired by Blades.

293. BLACKIE, W. J. Preservation of books in the tropics. (Agricultural journal. Suva, Fiji, 1930. 8°. v. 3, p. 84-85.) VPW (Fiji)

Recommends fumigation with hydrocyanic acid gas; painting both sides of the covers with a solution of 1 oz. of dichloride of mercury, 1 and $\frac{1}{2}$ oz. carbolic acid in 1 qt. of methylated spirits containing pyridine as one of its denaturing agents. Afterwards the covers should be varnished with shellac. Shelves should receive the same treatment. In addition vessels containing paradichloro-benzene should be placed on the shelves behind the books.

BLAYLOCK, R. R., JOINT AUTHOR. See KANTROWITZ, M. S., AND OTHERS.

294. BODKIN, GILBERT EDWIN. Notes on the Coleoptera of British Guiana: *Lasioderma servirorne*. (Entomologist's monthly magazine. London, 1919. 8°. v. 55 [series 3, v. 5], p. 264.)

The cigarette beetle found attacking books and papers.

295. BODKIN, GILBERT EDWIN. Report of the economic biologist for 1915. Georgetown, 1916. 10 p. f°. (British Guiana. Science and Agriculture Department. Report for the nine months, April - December, 1915. Appendix III.) [†]VPW (Guiana)

On p. 8-9, treatment of books against ravages of cockroaches, silverfish, mites, etc.

296. BOGENG, GUSTAV ADOLF ERICH. [Wurmfraszschutzmittel.] (In his: Der Bucheinband, ein Handbuch für Buchbinder und Büchersammler. Halle a. S.: Knapp, 1913. 8°. Abschnitte 73, p. 109-110.) * ITR

Development of the method of using oils and lacquers for protecting leather against insects.

297. BOGENG, GUSTAV ADOLF ERICH. "Wurmstiche." (In his: Einführung in die Bibliophilie. Leipzig: Hiersemann, 1931. 8°. p. 206.) * GAN

Note on wormholes.

298. BOHATTA, HANNS. Die Hygiene des Buches. (In his: Einführung in die Buchkunde ... Wien: Gilhofer & Ranschburg, 1927. 8°. p. 301-307.) * GAC

The greater part of the chapter concerns such insects as *Anobium paniceum*, *Anobium pertinax*, *Dermestes lardarius*, *Anthrenus museorum*, *Niptus hololeucus* Fald., *Niptus unicolor* Piller, *Lepisma sacch.*, and the useful *Chelifer cancroides* and *Chyletus eruditus*. Remedies given, particularly carbon disulphide.

299. BOLLE, JOHANN. La colle di pasta e i trali nelle rilegature. (Rivista delle biblioteche e degli archivi. Firenze, 1911. 4°. anno 22, v. 22, p. 169-172; figs. 1-4 opp. p. 152-153.) * HA

A letter concerning *Anobium paniceum* and recipes for poisons to put in the bookbinder's paste. Damage to paintings and books.

Twentieth Century, continued

300. BOLLE, JOHANN. *Sugli insetti dannosi ai libri.* (La Biblio filia. Firenze, 1903. 4°. anno 5, v. 5, p. 247.) ^{†* GAA}

A short note on the work of Johann Bolle as presented at the 6th congress of Italian bibliographers.

301. * Book pests and their causes. (Stationery world. London, 1911. v. 41, p. 108.)

Cf. Wolfgang Mejer reference no. 2237 in his *Bibliographie der Buchbinderei-Literatur*, Leipzig, 1925.

302. BOOK-WORMS. (Henley's twentieth century book of formulas, processes and trade secrets... Revised and enlarged edition by Prof. T. O'Connor Sloane. New York: Norman W. Henley Pub. Co., 1935. 8°. p. 425.)

M.R.R. Desk

Advises beating the books, exposing them to the sun and rubbing them with a cloth moistened with formaldehyde.

303. BOOKWORM. (Adyar Library. Report. Adyar, India: Vasanta Press [1916]. 8°. [no.] 29 for 1915, p. 13-14.) ^{* HPD}

Short note of a renewed attack by bookworms, apparently checked by spraying with formaldehyde as there is no further reference in later reports.

304. The BOOKWORM. (Library Association record. London, 1900. 8°. v. 2, p. 38.) ^{* HA}

A short facetious article from the New York Daily News, weekly edition.

305. * BOVELL, JOHN R. *Zygops histrio Boh.* among books. (Barbados. Agriculture Department. Report for 1918/19. Bridgetown, Barbados, 1921. f°. p. 26.)

A bare record of this weevil found among books in the office of the Colonial Secretary.—Golledge.

306. * BOYER, JACQUES. Bookworms and their ravages. illus. (Conquest. London, 1920. v. 2, p. 560-564.)

Copy not located.

307. BOYER, JACQUES. The insect enemies of books. illus. (Scientific American. New York, 1908. f°. v. 98, p. 413-414.) ^{†† VA}

The author states: "More books and manuscripts have been destroyed by insects than by fire, water, rats and mice combined." He names some of the more important pests and suggests such remedies as carbon disulphide, pyrethrum powder, burning moistened gun-powder, and using cockroach traps.

308. * BRASSLER, K. Bücherschädlinge und ihre Bekämpfung. (Börsenblatt für deutschen Buchhandel. Leipzig, 1928. 4°. Jahrg. 95, Nr. 126, p. 597-601.)

Cf. Mejer, *Bibliographie der Buchbinderei-Literatur*, Ergänzungsband, Leipzig, 1933, no. 1623.

309. BRITTON, WILTON EVERETT. Books injured by cockroaches. (Connecticut. Entomologist. Report of the state entomologist for the year 1904. New Haven, Conn., 1905. 8°. [no.] 4, p. 215, pl. III b.) ^{VPG}

Blattella germanica, control methods and illustration of damaged book.

310. BROOKS, PHILIP. The bookworm vanquished. (Philippine agriculturist. Laguna, 1934. v. 23, no. 3, p. 171-173.)

Japanese translation by Meguro-Kaichi in *Toshokan Kenyū* (Quarterly journal of the League of Young Librarians), Osaka, 1934, v. 7 [serial no. 28], p. 451-454. ^{* OSA}

Recounts difficulties in controlling *Sitodrepa panicca* and refers to the vacuum fumigation as reported by Iiams.

311. BROWNE, FRANK. The preservation of books in hot climates. (Scientific American supplement. New York, 1903. f°. v. 56, p. 23095.) ^{† VA}

The government analyst at Hong Kong gives a formula for a varnish to be used on books as a protection against bookworms and cockroaches.

312. BROWNE, FRANK. Preservation of books in hot climates. (Scientific American supplement. New York, 1908. f°. v. 65, p. 79.) ^{† VA}

Control measures for dampness, *Anobium*, *Lepisma*, cockroaches and the white ant. Formula given.

313. BRUES, CHARLES THOMAS. The insect pests of museums. (American Association of Museums. Proceedings. Charleston, S. C., 1909. v. 3, p. 23-54.) ^{* F}

Seventeen species, many of which are injurious to books, labels, etc. Illustrations of the insects and remedies.

314. BRUTAILS, JEAN AUGUSTE. Traitement des fonds d'archives par le sulfure de carbone. (Le Bibliographe moderne. Paris, 1906. 8°. année 10, p. 151-154.) ^{* GAA}

Destruction of bookworms in the Archives de la Gironde by the use of sulphur dioxide in a fumigating vault.

315. BUCK, MITCHELL S. Book repair and restoration, a manual of practical suggestions for bibliophiles... Philadelphia: Nicholas L. Brown, 1918. 126 p. illus. 12°. ^{* ITR}

On p. 93 is the statement that bookworms are practically unknown in America. However, some remedies are given.

316. BÜCHERHYGIENE. (Oesterreichischer Verein für Bibliothekswesen. Mitteilungen. Wien, 1904. 8°. Jahrg. 8, p. 150-153, 185-187.) ^{* DA}

Mostly concerning injurious insects and the work of Johann Bolle. The second part is a report of a paper by Bolle read before the K. K. Zentralkommission für Erforschung und Erhaltung der Kunst und historischen Denkmäler.

317. BÜCHERWURM. (Papier-Zeitung. Berlin, 1904. f°. Jahrg. 29, Nr. 23, p. 858.) ^{3-† VMA}

Describes the method of preparation of "Zaponlack," and its application to books and documents.

318. BUGBEE, JOHN D. Newest way of battling with insect pests of all kinds. illus. (Compressed air magazine. New York, 1930. 4°. v. 35, p. 3260-3264.) ^{VFM}

D. B. Mackie of the California Department of Agriculture is credited with devising a fumigating system that utilizes the vacuum principle of fumigation. "Vacufume" is manufactured by the Union Tank and Pipe Company of Los Angeles. Apparatus illustrated at work. Though there is no mention of bookworms this article is included to show the development of the system used at the Huntington Library. See article by Iiams.

Twentieth Century, continued

319. CARDÍN, PATRICIO G. Notas entomologicas: *Cryptotermes* sp. (Sociedad cubana de historia natural "Felipe Poey." Memorias. Habana, 1918. 8°. v. 3, p. 59-60.) PQA

Recommends that damaged wood be treated with carbon disulphide or bichloride of mercury. For books the formula is: 1,000 cc of methylated spirit, 20 gr. bichloride of mercury, 25 cc of phenic acid and enough shellac is added to produce a slightly adhesive liquid. Brush this mixture lightly over the covers of the books. Compare W. J. Blackie.

320. * CHILDE, A. Note sur un insecte de la famille des Annobides. (Sociedade de medicina e cirurgia do Rio de Janeiro. Boletim. Rio de Janeiro, 1918. p. 495.)

Cf. the bibliography of Fariá. The article concerns *Dorcacoma bibliophagum* and may be based on the article of Magalhães comparing Poey's insect.

321. CRYSTAL, R. N. An Oecophoria moth, *Borkhausenia pseudospretella* Stainton, attacking bookbindings, illus. (The Entomologist's monthly magazine. London, 1932. 8°. v. 68 [series 3, v. 18], p. 9-10.)

Describes damage to books in cloth bindings stored in cellar of the University College, Oxford. Very little damage to pages. Books nearest the floor damaged more than others. Brief notes on life-history.

322. CIM, ALBERT. Une bibliothèque. L'art d'acheter les livres, de les classer, de les conserver, et de s'en servir. Paris: Flammarion, 1902. 488 p. 8°. * HD

On p. 321-326 the author deals with the most injurious species and control measures. Bibliographical footnotes. This section was expanded in his *Le livre*, 1908.

323. CIM, ALBERT. Nettoyage des bibliothèques: les ennemis des livres: insectes bibliophages, illus. (In his: *Le livre: historique, achat, classement, usage et entretien*. Paris: Flammarion, 1908. 12°. partie 5, p. 2-66.) * GAC

Necessity of cleanliness, enemies in general, followed by a detailed exposition of the most important insect ravagers, based for the most part on Houlbert. Remedies given. Bibliographic footnote references.

324. CLARK, JOHN WILLIS. The care of books. An essay on the development of libraries and their fittings from the earliest times to the end of the eighteenth century. Cambridge: At the University Press, 1901. 330 p. 4°. * RG-* H

See p. 29-30. Oil of cedar used as an antiseptic in ancient times.

325. COCKERELL, DOUGLAS. Injurious influences to which books are subjected. (In his: Book-binding and the care of books, a text-book for book-binders and librarians. London: John Hogg, 1901. 12°. p. 291-301.) * ITR

There are several editions and a German translation from the 4th English: *Der Bucheinband und die Pflege des Buches...aus dem englischen übertragen von Felix Hübel, für die 2. Auflage durchgesehen von Maria Lühr*. Leipzig: Klinkhardt und Biermann, 1925, p. 283-293. * ITR.

"Injurious influences" include rats, mice, cockroaches and many insects. *Anobium panicum* and *Niptus hololeucus* especially mentioned. Remedies.

326. COGGIOLA, GIULIO. La rilegatura dei libri nelle biblioteche. (Rivista delle biblioteche e

degli archivi. Firenze, 1911. 4°. anno 22, v. 22, p. 145-169.) * HA

Library binding standards. See section no. 70 of the standard rules on p. 159 and p. 167-168 for recommendations on preventing insect attacks. Bolle's letter appended to this article. See Bolle.

327. COLLE pour reliure...resistant aux attaques des insectes. (Courrier du livre. Paris, 1904. 4°. année 6, p. 503.) * IAA

Potassium arsenate, bichloride of mercury and strychnine are the poison elements.

328. CONCOURS pour l'étude des insectes ennemis des livres. (Congrès international des bibliothécaires, Paris, 1900. Procès-verbaux et mémoires. Paris: H. Welter, 1901. 8°. p. 259-263, and note, p. 44-45.) * HA

Same as full "Programme d'un concours pour l'étude des insectes ennemis des livres" in *Bibliothèque de l'École des chartes*, Paris, 1901, tome 62, p. 149-151, DA. Other notices: "Concorso per lo studio degli insetti bibliofobi" in *La Bibliofilia*, Firenze, 1901, anno 3, v. 3, p. 83-84 (terms of prize in French). ↑ *GAA: Centralblatt für Bibliothekswesen*, Leipzig, 1902, Jahrg. 19, p. 598. * HA; Library journal, New York, 1900, v. 25, p. 569, 581-582, 1901, v. 26, p. 388-389. * HA; *Papier Zeitung*, Berlin, 1901, Jahrg. 26, Nr. 86, p. 3223, 3-17 VMA.

Two prizes were offered by Marie Pellechet, one of 1000 francs and another of 500 francs, for the two best papers on the scientific study and determination of insect species injurious to books, their description, life history, habits, ravages, parasites, materials upon which they feed, materials they dislike, methods of destruction and methods of keeping them out of libraries, in short a complete study of the problem. In addition a prize of 1000 francs was offered by an anonymous donor in the name of the Congress, to be known as the Prix du Congrès des bibliothécaires, for practically the same information on insects destructive to binding materials. For the summary of the results of these contests see under Henry Martin. See also Houlbert entry.

329. CONSERVATION des livres et des archives. (Technologie de l'imprimerie. Paris, 1934. 4°. cahier 7, p. 217-220.) * IPA

A report from the 1933 conference of the Union française des organismes de documentation. The two enemies of leather bindings are insects and the air. As for insects it is recommended that wood be eliminated from the library. Formulas are given for protective coatings for bindings, poison paste and fumigants.

330. CORBETT, G. H. Entomological notes. By G. H. C. (Malayan agricultural journal. Kuala Lumpur, 1931. v. 9, no. 4, p. 194-196.)

Lasioderma serricornis recorded as injuring bindings and leaves of books. Control measures given.

331. COTTON, RICHARD THOMAS, AND R. C. ROARK. Ethylene oxide as a fumigant. (Industrial and engineering chemistry. Easton, Pa., 1928. 4°. v. 20, p. 805.) * VOA

First reported use of this chemical as an insecticide. Insects experimented with included the clothes moth and the carpet beetle. This experiment eventually led to the process used at the Huntington Library.

332. COUTTS, HENRY T., AND GEORGE A. STEPHEN. Manual of library bookbinding, practical and historical...with an introduction by Douglas Cockerell... London: Libraco, Ltd., 1911. 251 p. 12°. * ITR

The chapter by Coutts on book-repairing gives book-worm remedies, section 109, p. 127, and method of filling in holes, section 125, p. 132-133. Millboards made from tarred rope are unpalatable to insects.

Twentieth Century, continued

333. CROZET, Léo. Manuel pratique du bibliothécaire... Paris: Émile Nourry, 1932. 279 p. 12°. (Association des bibliothécaires français.) * HB

See p. 182-183 for a short note on the use of carbon disulphide.

334. CUNDALL, FRANK. The preservation of books in the tropics. (In his: Handbook of Jamaica. Kingston, Jamaica: Government Printing Office, 1926. 8°. p. 1-2.)

Various recommendations such as the use of carbon disulphide as a fumigant and application of corrosive sublimate, wood creosote, and alcohol. Also recommends shellac as a varnish. No copy located but reprint sent to Mr. Weiss by the author.

335. DASH, J. SYDNEY. Report of the assistant superintendent of agriculture on the entomological and mycological work carried out during the season under review. [Bridgetown, Barbados, 1918.] 62 p. f°. (Barbados. Agriculture Department. Report for 1916-1917, issued as a supplement to the Barbados official gazette, Jan. 24, 1918, document 113.) † VPG (Barbados)

Damage to books by *Lepisma*, p. 46, and by *Catorama herbarium*, p. 58.

335A. * La DESTRUCTION des insectes des livres. (Chronique graphique. Bruxelles, Oct., 1932, p. 1619.)

336. DUNLOP, W. W. C. An appeal to publishers. (Times literary supplement. London, 1924. f°. v. 23, p. 731.) † NAA

Letter from the Barbados stating that the French and German bound books are not molested by book-worms and asking the British publishers to do some investigating.

337. ECKSTEIN, PROF. Insekten als Zerstörer von Papier. illus. (Papier Zeitung. Berlin, 1933. 4°. Jahrg. 58, p. 1153-1154; additional notes, p. 1199, 1283.) † VMA

Describes *Sirex gigas* and *Lepisma saccharina*, and in the notes an account of the damage caused by *Ptilinus pectinicornis* and *Thermobia aegyptiaca*, and silverfish in Hong Kong and in Egypt.

338. EHRHORN, EDWARD M. Pests intercepted (Hawaiian forester and agriculturist. Honolulu, 1926. 8°. v. 23, p. 19.) VQN

A bare record of the interception in quarantine of termites in books from China.

339. * FARÍA, DIEGO DE. Os inimigos dos nossos livros. (Serviço Sanitário Estado de São Paulo, n. s., no. 4, 1919. 42 p. 5 pl.)

Spanish translation: "Los enemigos de nuestros libros. Datos preliminares sobre un procedimiento de destrucción de los insectos que atacan a los libros en San Pablo... traducido por E. Morales..." Buenos Aires: Imprenta y casa editorial <Coni>, 1926. 33 p. illus. 4°. (Universidad nacional de Tucumán. Extensión universitaria, no. 19.) STZ (Tucumán). Bibliography included. The most important part of this Spanish translation reprinted: "Higiene del libro" in Alfredo Cónsole, *Fundación y organización de bibliotecas populares... segunda edición*, Buenos Aires: López, 1935, p. 175-189. * HB. The title of this work previous to 1931 was *El Bibliotecario y la biblioteca: fundación y organización de bibliotecas populares*. The second edition under this title, Buenos Aires, 1929, * HD, and perhaps also the first edition, contains the extract from Faria.

An excellent English abstract of this important Portuguese work in *Review of applied entomology*, London, 1920, series A, v. 8, p. 36-37. Describes measures against insects (particularly *Catorama herbarium* and *Dorcatoma bibliophagum brasiliense*) that destroy books in Brazil.

340. FELT, EPHRAIM PORTER. Control of flies and other household insects. Albany, N. Y., 1910. 53 p. illus. 8°. (New York State Museum. Bulletin, no. 136.) * F

A revision of bulletin no. 129. Includes the life history and control of book lice, white ants, roaches, and silverfish.

341. FEYTAUD, J. Sur l'emploi de la chloropicrine contre les vrillettes. (Revue de zoologie agricole et appliquée. Bordeaux, 1924. v. 23, p. 243-244.)

Chloropicrin used against *Anobium hirtum* found damaging books.

342. FLECK, C. Vertilgung von Bücherwurmern durch Ozon. (Papier-Zeitung. Berlin, 1904. f°. Jahrg. 29, Nr. 30, p. 1092.) 3-† VMA

Ozone used according to this method requires no apparatus.

343. FREEPORT, PSEUD. Insects in books. (Notes and queries. London, 1927. 8°. v. 152, p. 442.) * R-* DA

Cockroach damage in West Africa. For answers see same, 1927, v. 153, p. 179, where F. A. G. Stuart recommends a commercial varnish used successfully in Malaya; and on p. 214 and 287 where J. Ardagh gives references to articles.

344. FULLAWAY, DAVID T. Termites, or white ants, in Hawaii. illus. (Hawaiian forester and agriculturist. Honolulu, 1926. 8°. v. 23, p. 68-88.) VQN

Description of *Coptotermes intrudens*, *Cryptotermes piceatus*, and *Kalotermitess immigrans* with damage caused to buildings and books (p. 81), and control methods. The problem is acute in Hawaii.

345. G. Bücherfeinde in den Tropen. (Papier-Zeitung. Berlin, 1903. f°. Jahrg. 28, Nr. 71, p. 2519.) 3-† VMA

Abstract from a newspaper. Damage caused by the Kakerlak (cockroach) and an unnamed insect "ein kleines schwarzes Insekt, das einem Käfer gleicht," described as the two worst enemies of books. Remedies indicated.

346. GAHAN, CHARLES JOSEPH. Furniture beetles; their life-history and how to check or prevent the damage caused by the worm. London: The Museum, 1920. 23 p. illus. 8°. (British Museum. Natural History Department. Economic series, no. 11.) PQA

Only the *Xestobium ruffovillosum*, p. 14-16, the death-watch, mentioned for damage to books. Gives the kinds of wood most subject and most immune to attack and indicates control measures. Information useful to libraries still equipped with wooden shelving.

346A. GALLO, ALFONSO. Le malattie del libro, le cure ed i restauri. Milano: A. Mondadori (1935). 221 p. illus. 12°. * HHL

For a review of the most important insects with particular attention to damage caused in Italian libraries in the last decade see p. 33-44. For a discussion of control measures which include preservatives for documents, aromatic substances and chemical fumigants see p. 96-112. Experiments with vacuum fumigation and sulphur dioxide began as early as 1915 in the library of the University at Messina. Other

Twentieth Century, continued

fumigants considered are carbon tetrachloride, chlorine, formaldehyde, carbon disulphide, and hydrocyanic acid. There is also a facsimile of the Arabian prayer to Kubéikag for help against the bookworms. See also the German translation of this prayer by Karabacek, entry no. 353. Gallo has included two illustrations of damage by termites. Bibliographies appended to chapters.

347. GALLO, ALFONSO. *Per una lotta razionale contro alcuni nemici dei libri.* (Accademie e biblioteche d'Italia. Roma, 1930. 8°. anno 3, p. 329-344.) * HA

General article based on Houlbert and others.

348. GIBSON, ARTHUR, AND C. R. TWINN. Household insects and their control. Ottawa, 1931. 87 p. illus. 8°. (Canada. Department of Agriculture. Bulletin. new series, no. 112 revised.) VPZ

On p. 49-51 the silverfish, book louse, and the drugstore beetle are described and remedies indicated.

349. GIBSON, S. Silverfish. (Bodleian quarterly record. Oxford, 1923. 8°. v. 4, p. 25-26.) * HPD (Oxford)

Damage in the Bodleian Library.

350-351. GIRAUD-MANGIN, MARCEL. *De la préservation des livres rares contre les insectes et les moisissures.* (Congrès international des bibliothécaires et des bibliophiles, Paris, 1923. Procès-verbaux et mémoires. Paris: Jouve & Cie., 1925. 8°. p. 134-135.)

* HA (International)

Recommends the use of trioxymethylene (CH_2O), a white powdery polymeride of formaldehyde which slowly oxydizes in the air.

352. GRAESEL, ARNIM. *Handbuch der Bibliothekslehre.* Zweite voellig umgearbeitete Auflage der "Grundzüge der Bibliothekslehre, von Jul. Petzholdts Katechismus der Bibliothekslehre." Leipzig: J. J. Weber, 1902. 584 p. 8°. * HD

Revised from his *Grundzüge der Bibliothekslehre*, Leipzig, 1890. French translation: *Manuel de bibliothéconomie... traduction de Jules Laude.* Paris: H. Welter, 1897. * HD. In 1902 ed. see p. 323-327 for advice on keeping the library free from bookworms. Several footnote references.

GROOME, G. G., JOINT AUTHOR. See KANTROWITZ, M. S., AND OTHERS.

353. HAAS, W. *Ueber Bücherfeinde im allgemeinen und tierische im besonderen.* (Oesterreichischer Verein für Bibliothekswesen. Mitteilungen. Wien, 1905. 8°. Jahrg. 9, p. 114-117.) * HA

A very full abstract of a paper which named many insects and gave various methods of book preservation naming substances which have been used for that purpose for centuries. Appended is a short note on Jos. Karabacek's history of bookworm literature in which he tells of an Arabian prayer, "O Kabikedsch, hilf gegen die Bücherwürmer."

354. HAINES, F. H. *Borkhausenia pseudosprentella* Stt., attacking bookbindings. (The Entomologist's monthly magazine. London, 1932. 8°. v. 68 [series 3, v. 18], p. 146.)

Records damage to leather bindings. Dampness favors development of this insect.

355. HANSEN, FRITZ. *Bücherfeinde.* (Blätter für Buchgestaltung und Buchpflege. Leipzig [1930]. 4°. Jahrg. 1, Heft 3, p. 1-2.)

Short article on *Anobium pertinax*, *Ptinus*, and *Atropus pulsatoria*. Copy: NNC.

356. HANSEN, FRITZ. *Der Bücherwurm.* (Archiv für Buchgewerbe. Leipzig, 1917. 4°. Bd. 54, p. 235-236.) +* IPA

Same, with few changes, in *Zeitschrift für Büchernfreunde*, Leipzig, 1919, N. F., Jahrg. 11, Hälften 1, p. 145-146, two illus. opp. p. 106, +* GAA.

General article with some remedies indicated.

357. * HANSEN, FRITZ. *Bücherwürmer.* (Die Heftlade; Zeitschrift für die Förderer des Jakob Krausse-Bundes. Berlin, 1924. 8°. Jahrg. 2, p. 23-26.)

358. HARDY, ERIC. "Book-worms" of a sort: insect pests that attack libraries, and some remedies. (Librarian and book world. London, 1934. 8°. v. 24, p. 10-11.) * HA

Atropus divinatoria, *Chelifer cancroides*, *Chiridium museum* attacking books in the Liverpool Naturalists' Field Club. Species of *Lyctus* and *Anobium* sometimes attack wood shelving. Various remedies.

359. HASLAM, W. The library handbook of genuine trade secrets and instructions for cleaning, repairing and restoring old manuscripts, engravings and books, as practised by the experts. London: W. & G. Foyle [1923]. 51 p. 12°. * I p.v.42

See p. 34 for tips on the prevention of damage by bookworms. Lac varnish on bookbindings and shelves is recommended.

360. HEADLEE, THOMAS J. [*Dermestes vulpinus.*] (Journal of economic entomology. Concord, N. H., 1913. 8°. v. 6, p. 54-55.) QIQ

A short note on the destruction of this insect in books by the application of heat, 125 degrees F.

361. HENNIG, PAUL. *Bücherfressende Insekten und ihre Bekämpfung.* (Der Bibliothekar. Monatsschrift für Arbeiterbibliotheken. Leipzig, 1910. 4°. Jahrg. 2, p. 169-171.)

General article mentioning the most injurious species. Discusses possible control measures: gases, heat, cold, and poisons. .

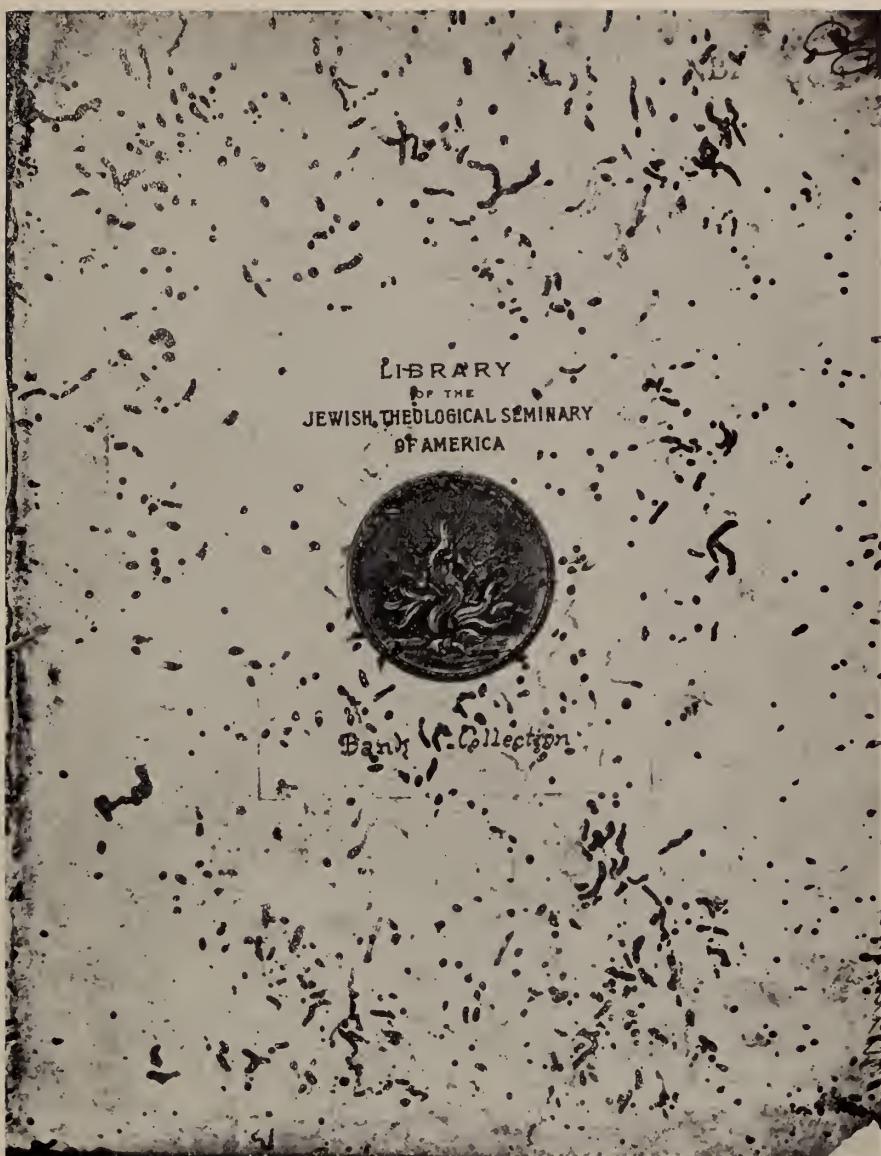
362. HENNIG, PAUL. Insekten als Bücherfeinde und ein Vorschlag zu ihrer Bekämpfung. (Zeitschrift für Büchernfreunde. Leipzig, 1910. 4°. N. F. Jahrg. 1, Hälften 2, p. 331-334.) +* GAA

Based on Houlhert and Prümers. Suggests killing the insects by subjecting the books to extreme cold.

363. HENRY, FREDERICK P. The book-worm. illus. (Medical library and historical journal. Brooklyn, N. Y., 1903. 8°. v. 1, p. 18-26.) WAA

A review of some of the literature of literary flavor, quoting poems by Evenus, Dovaston, Woods, and Burns, mentioning others and adding one by himself. Gives an account of the ravages of *Sitodrepa paniceum* in the library of the College of Physicians and Surgeons in Philadelphia.

364. HENRY E. HUNTINGTON LIBRARY AND ART GALLERY. San Marino, Cal. Annual report. San Marino, 1932-35. 8°. no. 4, 1930/31, p. 22-



Bank U. Collection

Typical Example of Injury Done by the Following Species of Beetle:
Sitodrepa panicea; *Gastrallus Laevigatus Oliv.*;
Ptinus fur Linn.; *Niptus hololeucus* Falb.



Cloth Bindings and Pasted Paper Label Damaged by Cockroaches

Twentieth Century, continued

23; no. 5, 1931/32, p. 20-21; no. 6, 1932/33, p. 24-25; no. 7, 1933/34, p. 21. * HND

Progress of the fight on bookworms at Huntington Library. Insect attacks not confined to old books. Everything in the rare book stack being treated at an average cost per volume of less than one third of a cent each. For method see Iiams entry.

365. HERRICK, GLENN WASHINGTON. Insects injurious to the household and annoying to man. Revised edition. New York: Macmillan, 1926. 478 p. illus. 8°. QIP

First edition, New York, 1914. Bookworms and damage to books receive considerable attention: life history, habits and control of cockroaches, fish moths, drugstore beetles, termites, and wood-borers. Bibliography at the ends of the chapters.

HICKS, J. F. G., JR., JOINT AUTHOR. See KIMBERLY, ARTHUR E., AND J. F. G. HICKS, JR.

366. HIRIART, LÉON. Note sur les insectes qui ravagent les bibliothèques. (Congrès international des bibliothécaires, Paris, 1900. Procès-verbaux et mémoires. Paris: H. Weiler, 1901. 8°. p. 135-138.) * HA

Abstract: "War against hook pests" in *Library Association record*, London, 1900, v. 3, p. 357-358. * HA

Abstract by A. G.: "Bücherwürmer" in *Papier-Zeitung*, Berlin, 1900, Jahrg. 25, Nr. 80, p. 2985, 3-† VMA.

Abstract: "Bookworms" in *Library journal*, New York, 1900, v. 25, p. 581-582. * HA

Description of several species of *Anobium*. Benzine recommended for the shelves and the books. Other remedies discussed. It was felt that adequate remedies were lacking.

367. HOFFMAN, WILLIAM ALBERT. *Rhizopertha dominicana* as a library pest. (Journal of economic entomology. Geneva, N. Y., 1933. 8°. v. 26, p. 293-294.) QIO

Reported to be the first record of book damage by this insect. "Cyanogas A Dust" used against this pest with apparent success in the library of the School of Tropical Medicine, San Juan, P. R., 10 lbs. to 10,320 cubic feet.

368. HOULBERT, CONSTANT VINCENT. Les insectes ennemis des livres. Leurs mœurs. Moyens de les detruire. Paris: Picard & fils, 1903. xxxviii, 269 p., 3 pl., 59 figs. 8°. * HHL

Reviewed in *Athenaeum*, London, 1903, [v. 122], no. 3950, p. 65. * DA; by J. Meisenheimer in *Centralblatt für Bibliotheksseiten*, Leipzig, 1903, Jahrg. 20, p. 584-585. * HA; *Library journal*, New York, 1903, v. 28, p. 637-638. * HA; *Papier-Zeitung*, Berlin, 1903, Jahrg. 28, Nr. 63, p. 2229, 3-† VMA; and *Revue scientifique*, Paris, 1903, série 4, tome 20 [année 40, semestre 2], p. 115-116. OA.

This manual, result of the Prix de Marie Pellechet offered at the International Congress of Librarians, Paris, 1900, is the most important work on the subject of bookworms. Houlbert describes 32 species of Coleoptera, 4 of Orthoptera, 6 of Pseudo-neuroptera, 9 of Thysanura, 1 of Hymenoptera, 2 of Arachnida, and 6 suspects, a total of 67 species. Information given on life histories, habits, and control measures. Index to authors mentioned, and index to species, both scientific and popular names, and insecticides. The bibliography includes 94 titles with additional authors mentioned in the text. Since this work is a regular bookworm bible there have been numerous articles based on the information given. For the prize which occasioned this book see under Concours pour l'étude des insectes ennemis des livres. For the summaries of the results of this prize contest and that of the Prix

du Congrès des bibliothécaires see the preface to Houlbert, p. iii-xii, and also under the entry Martin.

369. HOULBERT, CONSTANT VINCENT. *Les insectes des livres*. illus. (Revue universelle; recueil documentaire universel et illustré. Paris, 1902. f°. tome 2, no. 76, p. 626-628.) †* AP

An introductory review of prizes offered for remedies, followed by a description with illustrations of some of the more important insects.

370. HOWARD, LELAND OSSIAN. The insect menace. New York: Century Co. [1931.] 347 p. 8°. QIP

On p. 60-61 there is a description of the omnivorous appetite of termites, and opposite p. 62 an illustration of the damage in a book caused by *Reticulitermes flavipes*.

371. HUCK, THOMAS W. Book pests and book and print restoration. (Library Association record. London, 1913. 8°. v. 15, p. 165-177.) * HA

The author quotes Westwood and others. Advises repeated washing of the shelves with a commercial preparation "Sanitas Okol," the injection of henzoline or paraffin into insect channels in wooden shelves, the placing of camphor, or small pieces of sponge saturated with carbolic acid, or saucers of benzine and formalin on the shelves behind the books.

HUGHES, A. W. MCKENNY, JOINT AUTHOR. See AUSTEN, ERNEST EDWARD, AND A. W. MCKENNY HUGHES.

371A. IGLESIAS, L. Contra la polilla de los libros. illus. (Asociación de bibliotecarios y bibliógrafos de España. Boletín de bibliotecas y bibliografía. Madrid, 1935. 8°. tomo 2, p. 89-100.) * HA

Details of processes employed in the library of the Universidad de Santiago de Compostela against a plague of *Barkhausenia pseudopretella*. The books were disinfected with carbon disulphide and the adult moths were caught with light-traps and then killed with potassium cyanide.

372. IIAMS, THOMAS M. Preservation of rare books and manuscripts in the Huntington Library. illus. 3 pl. (Library quarterly. Chicago, 1932. 8°. v. 2, p. 375-386.) * HA

Reprinted in *Publishers' circular*, London, 1933, v. 138, p. 215-221 with illus., †* GDD, and in *Pacific binder talk*, Los Angeles, 1932, v. 5, p. 47-51, 68-69, * ITA (Bindery).

Abstracts: "Vacuum fumigator at the Huntington Library" in *Saturday review of literature*, New York, 1933, v. 10, p. 95. † NAA; "Fumigating books to kill bookworms" in *Scientific American*, New York, 1933, v. 148, p. 118, VA. See articles by Bugbee, Russ, and Cotton.

Records the successful fumigation of books infested with *Sitadrepa panicum* by using a special vacuum apparatus and a newly-developed commercial compound, carboxide (ethylene oxide and carbon dioxide).

373. INDIA.—IMPERIAL LIBRARY, CALCUTTA. Report on the working of the Imperial Library. Calcutta, 1915-33. 4° and 8°. 1914/15, sec. 19-20, p. 7-8; 1915/16, sec. 27-28, p. 12-13; 1916/17, sec. 24, p. 9; 1932/33, sec. x, p. 5. * HPD

Records protective measures against white ants and bookworms. Expresses fear that the treating of books with poison solutions will hasten the "perishing" of the paper. In this respect see entry under Sudborough and Mehta.

Twentieth Century, continued

374. INSEKTEN als Bücherfeinde. (Börsenblatt für den deutschen Buchhandel. Leipzig, 1910. f°. Jahrg. 77, Nr. 243, p. 12310-12313.) †* GDH

A review of the important literature and prizes offered with some account of the more important insect ravagers.

375. INSEKTEN als Feinde von Bucheinbänden. (Papier-Zeitung. Berlin, 1925. 4°. Jahrg. 50, p. 1300, 1536.) † VMA

Experiences in Java and Brazil concerning bindings with and without lime. Casein in the binding seemingly attracts insects while lime repels them.

375A. GL'INSETTI bibliofagi. (La Bibliofilia. Firenze, 1913. 4°. anno 15, v. 15, p. 37-38.) †* GAA

Mentions termite damage in France and general insect depredations. Discusses the problem of effective remedies.

376. JACKSON, HOLBROOK. A digression of book-worms. (In his: The anatomy of bibliomania. New York: Charles Scribner's Sons, 1932. 8°. p. 545-562.) * GBO

An essay with a collection of quotations, literary and otherwise, and bibliographical footnotes.

377. JACOBS, R. M. Some household insects. VIII: Miscellaneous. (Table talk. Philadelphia, 1901. 8°. v. 16, p. 5-7.) VTA

Lepisma saccharina and *Atropos divinatoria*, enemies of books.

378. * JEPSON, F. P. Insects injurious to books. (Fiji. Agriculture Department. Annual report for 1919. Suva, 1920. p. 11.)

Fiji. Legislative Council. Council paper no. 65. *Anobium paniceum* as a serious pest of books in Fiji, and fumigation as a control measure.

379. JONES, HERBERT. Insects destructive to books; some pests. (Library Association record. London, 1912. 8°. v. 14, p. 286-287.) * HA

Refers to Reinicke's lecture at University of Pennsylvania and decries the lack of sure and certain remedies. Thirty-five references to literature on the subject given.

KAISHA, OHBAKYO SEISHI KABUSHIKI, JOINT AUTHOR. See OISHI, T., AND OHBAKYO SEISHI KABUSHIKI KAISHA.

380. KANTROWITZ, M. S., AND OTHERS. Starch-filled book cloth. By M. S. Kantrowicz, R. R. Blaylock and G. G. Groome. Washington, D. C., 1934. 27 p. 8°. (United States. Government Printing Office. Technical bulletin. no. 21.) * IPR

Records on p. 7 experiments and results on making cloths resistant to the attacks of the croton bug and the large American cockroach. Immunity depends upon the kind of cloth, quality, and whether sized or unsized. Cellulose lacquers are recommended.

381. KIMBERLY, ARTHUR E., AND J. F. G. HICKS, Jr. A survey of storage conditions in libraries relative to the preservation of records. Washington, D. C., 1931. 8 p. 8°. (United States. Bureau of Standards. Miscellaneous publication. no. 128.) VBDA

Thirteen libraries in the United States are investigated for external deteriorating agents: (1) light,

(2) injurious gases, (3) changes in temperature and humidity, (4) insects, worms, mold, and fungi. As far as no. 4 was concerned "little difficulty was being experienced with pests."

382. KOTINSKY, JACOB. A new book and leather pest. (Hawaiian forester and agriculturist. Honolulu, 1906. 8°. v. 3, p. 117-118.) VQN

Kotinsky bred *Catorma mexicana* from books and states that it occurs in leather, straw, and decaying trees. Fumigation with carbon disulphide is recommended.

383. KUNZ, GEORGE FREDERICK. The imperishable records of the ancients compared with methods in use up to the present time. (American Scenic and Historic Preservation Society. Annual report for 1912. Albany, N. Y., 1912. 8°. no. 17, appendix E, p. 365-385.) IAA

By imperishable Kunz means clay tablets, etc. Among the other disadvantages of modern methods there is the insidious enemy of paper, the bookworm (p. 380).

384. LADEWIG, PAUL. Politik der Bücherei... Dritte neugestaltete und erweiterte Auflage. Leipzig: Lorentz, 1934. 490 p. 8°. * HD

See p. 100 and 307. Modern construction of libraries discourages wood-boring worms. Vigilance against bookworms is recommended but remedies are not given.

385. LAFFARGUE, LÉON. Conservation des livres. (In his: Reliure, cartonnage et dorure, outillage et technique de l'amateur. Paris: H. Morin [1933?]. 8°. p. 275-276.) * ITR

Discusses dampness, insects, and dust and gives simple home remedies.

386. LAING, FREDERICK. The cockroach, its life-history and how to deal with it. London: British Museum, 1921. 18 p. illus. 8°. (British Museum. Natural History Department. Economic series. no. 12.) PQA

General account of the Oriental, American, German, and Australian cockroaches. Methods of control include insect powders, traps, fumigation, and subjection to heat over 130 degrees F. In describing the voracious appetite of the cockroach the author states: "The paper or the whitewash on the wall, books, boots, bair, all are eaten as readily as the daintiest dish."

387. LAS NAVAS, CONDE DE. Amigos y enemigos del libro. (La España moderna. Madrid, 1904. 8°. anno 16, tomo 191, p. 40-51.) * DR

A general article on friends and enemies, with short mention of insects. A general bibliography on friends and enemies is appended likewise with scant attention to insects.

387A. LEFRoy, HAROLD MAXWELL. The general treatment of insect pests. Second edition revised. Bridgetown, Barbados: The Commissioner for Agriculture, 1901. 35 p. 12°. (Great Britain. Imperial Department of Agriculture for the West Indies. Pamphlet series. no. 5.) VPW

Abstracts giving formula: "Preserving books" in *Agricultural news*, Bridgetown, Barbados, 1902, v. 1, p. 140; "Preserving hooks in the tropics," *Agricultural news*, v. 2, p. 42; "Cockroaches and ants as house pests," *Agricultural news*, v. 6, p. 346.

On p. 27 the author recommends that copper sulphate be put in the binding paste and gives a corrosive sublimate formula for painting the bindings.

Twentieth Century, continued

387B. LEFROY, HAROLD MAXWELL. Preserving books in the tropics. (Agricultural news. Bridgetown, Barbados, 1909. 4°. v. 8, p. 367.) ^{† VPA (Gt. Br.)}

Extracts from his article in *The Eastern printers' yearbook* (no year or volume given, set not in Library). Gives methods of control for *Sitodrepa paniceum* and *Periplaneta australasiae*. Gives formula for a poisonous mixture for treating books, used at Pusa Library, India.

388. LEFROY, HAROLD MAXWELL. Two experiments in house fumigation. (Annals of applied biology. London, 1917. 4°. v. 4, p. 115-118.)

Records the successful fumigation of a two-story house heavily infested with book-lice, giving details as to materials, procedure, and cost. — *After Colledge.*

389. LENORMAND, LOUIS SÉBASTIEN. Moyens de préserver les livres des insectes et des vers. (In his: Nouveau manuel complet du relieur en tous genres... Nouvelle édition... par Maigne... Paris: L. Mulo, 1923. 24°. p. 397-399.)

Manuels Roret.

First edition, Paris: Roret, 1827. Recommends camphor, tobacco, and shaking and dusting the books periodically. Also recommendations for binding materials and the kinds of wood to be used for shelving. Takes no note of Houlbert's work and shows lack of proper editing of later editions.

390. LESCHANOWSKY, GOTTLIEB. Durch Insekten verdorbene Plakate. (Papier-Zeitung. Berlin, 1925. 4°. Jahrg. 50, p. 3554.) ^{† VMA}

Describes damage by *Lepisma* in South Africa, and gives naphthalin as a remedy.

391. LEWIS, JANET COOK. Librarian and book doctor... [sketch of her life and work.] (Biographical cyclopaedia of American women, compiled under the supervision of Erma Conkling Lee. New York: Franklin W. Lee Publishing Corp., 1925. 4°. v. 2, p. 190-194.) ^{SNE}

For preservation of leather bindings, notably in the Boston Athenaeum, against disintegration and the attacks of insects she used an animal and vegetable oil refined from a geologic deposit.

392. LEXIKON des gesamten Buchwesens hrsg. von Karl Löffler und Joachim Kirchner unter Mitwirkung von Wilhelm Olbrich. Leipzig: Hiersemann, 1934-. 4°. ^{* RG-* I}

In progress.

See under Buchpflege, Bücherfeinde, Bücherschädlinge, Bücherwurm, etc. The articles are short, include bibliographical references, and are signed.

393. LINE, ERIC CHARLES. Insect pests in the leather industry. illus. (International Society of Leather Trades' Chemists. Journal. London, 1934. 8°. v. 18, p. 244-258.) ^{VMA}

Résumé in French, p. 258-260.

A most comprehensive survey of insects injurious to leather in storage, giving life history, description, and control methods. Includes many insects known to be injurious to books and many other potential enemies of leather bindings. Mentions the use of rotenone for insect proofing leather. Bibliography of 11 items.

394. * LINHART, ADOLF. Feinde des Papiers. (Urania; Wochenschrift für Volksbildung. Wien, 1908. Jahrg. 1, Heft 4, p. 29-31.)

Cf. F. Bartsch in *Wochenblatt für Papierfabrikation*, Biberach, 1909, Jahrg. 40, p. 1025.

395. [LIVRES rongés par les insectes.] (La Reliure. Paris, 1912. f°. année 22, p. 181-182.) ^{†* ITA}

In answer to a question the editor gives remedies by Cim and Peignot.

396. LONCHAMP, FRÉDÉRIC CHARLES. Les ennemis du livre et les moyens de les vaincre — vers ou insectes bibliophages. (In his: Therapeutica graphica ou l'art de collectioner, de conserver et de restaurer les dessins, les manuscrits, les estampes et les livres. Paris et Lausanne: Librairie des bibliophiles, 1930. 12°. p. 20-22.) ^{* HHL}

Mentions a number of book pests and control methods. Use the index for related material such as methods of repairing worm-eaten books.

397. LUCIANO, JOSÉ. Plagas de insectos daños al hogar y medios para combatirlos. (Revista de agricultura de Puerto Rico. San Juan, 1922. 8°. v. 8, p. 27-36.) ^{VPY}

Includes damage to books by *Periplaneta americana*, *Periplaneta australasiae*, *Amphiacusta caribbea* (crickets which "attack and eat books, cloth, paper and other articles when regular food is not available" according to this observer) and *Lepisma saccharinum*. Control measures.

398. LYDENBERG, HARRY MILLER, AND JOHN ARCHER. Some enemies of books. (In their: The care and repair of books. New York: R. R. Bowker Co., 1931. 8°. p. 21-31.) ^{* HHL}

This section discusses temperature, humidity, air pollution, disease germs, mildew, dust, bed bugs which sometimes get into books, cockroaches and bookworms, with appropriate control measures; for bookworms, formaldehyde and corrosive sublimate. References to literature.

399. McCOMB, DANIEL QUICK. Faithful in that which is least. (Libraries. Chicago, 1930. 8°. v. 35, p. 190-192.) ^{* HA}

Concerning the control of ants, cockroaches, silver-tail moths, mold and termites in the Los Angeles Public Library with simple home remedies rather than depending on the expensive exterminating companies.

400. McDANIEL, EUGENIA INEZ. Cockroaches, silver-fish and book-lice. East Lansing, Mich., 1928. 12 p. illus. 8°. (Michigan Agricultural Experiment Station, East Lansing. Circular bulletin no. 101.) ^{VPG}

Outlines the life histories, habits, and control methods of the species mentioned.

401. MACDOUGALL, R. STEWART. Insect and arachnid pests of 1916. illus. (Highland and Agricultural Society of Scotland. Transactions. Edinburgh, 1917. 8°. series 5, v. 29, p. 148-151.) ^{VPA}

Including two bookworms: *Sitodrepa panicea*, destructive to foodstuffs, books, manuscripts, pictures, etc., and *Anobium domesticum*, destructive to wooden bookcases.

402. * MAGALHÃES, PIEDRO SEVERANIO DE. *Dorcatoma bibliophagum*. Rio de Janeiro: Jornal de comercio, 1926. 45 p., 2 pl.

Copy: DA.

A series of reprints from this Brazilian newspaper summarizing the local evidence as to the identity of this beetle and discussing the identity of the Anobiid infesting books in Brazil.

Twentieth Century, continued

403. MAGALHÃES, PIEDRO SEVERANIO DE. Sur les insectes qui attaquent les livres. (Société zoologique de France. Bulletin. Paris, 1907. 8°. v. 32, p. 95-100.) QGA

Same revised: "L'anobiidé, ravageur des livres au Brésil" in *Revue scientifique*, Paris, 1908, année 46, série 5, tome 9, p. 10-14. OA.

* Translation: "O nobídeo devastador dos livros no Brasil" in *Tribuna médica*, Rio de Janeiro, 1908, anno 14, p. 118, 137.

A *Tineola* species possibly *uterella*, and *Lepisma* mentioned. Most of the article is taken up with a comparison of *Dorcatoma bibliophagum* and Poey's *Anopium bibliothecarum*, apparently the same insect.

404. MAIRE, ALBERT. La bibliothèque et l'hygiène du livre: les insectes. (Centralblatt für Bibliothekswesen. Leipzig, 1901. 8°. Jahrg. 18, p. 261-262.) * HA

This article forms the basis of the section on insects in his *Technique du livre*, which see. Same in *Courrier des bibliothèques*, Paris, 1901, année 1, p. 195-196. * HA.

405. MAIRE, ALBERT. Les insectes. (In his: La technique du livre... Paris: Paulin et Cie., 1908. 8°. p. 300-305.) * I

Makes a general statement of the problem and refers the reader to Houlbert for specific information.

406. MAKING bindings insect proof. (Bookbinders' monthly. New York, 1929. 8°. v. 10, no. 7, p. 2.) * ITA

Reprinted in Employing Bookbinders of America, *Proceedings of the tenth annual convention, Cleveland, Ohio, 1929*, New York [1930], p. 213-214. * ITA.
Extracts from the 1927 Annual report of the U. S. Public Printer (Edward O. Reed, technical director) and a communication from Frank M. Barnard on poisonous pastes.

407. MARCOVITCH, SIMON. How to control certain pests of the household. Knoxville: University of Tennessee, 1933. 19 p. illus. 8°. (Tennessee. Agricultural Experiment Station, Knoxville. Bulletin. no. 147.) VPG

Sodium fluosilicate, scattered around as a dry powder, is recommended against cockroaches and book lice. Silverfish may be controlled by using it as a bait mixed with five to eight parts of flour.

408. MARCHMONT, FRED. A real live bookworm. (Publishers' circular and booksellers' record. London, 1915. 4°. v. 103 [new series, v. 52], p. 9.) * GDD

A request for information. Answers: p. 28, J. Pennell, Helen Oughton, A. B. Copley and S. Cotterell indicate species, mostly coleopterous, and habits. See also James Anderson.

409. MARCUS, B. A. Beiträge zur Anatomie und Biologie des Messinkäfers. illus. (Zeitschrift für angewandte Entomologie. Berlin, 1929. 4°. Bd. 14, p. 417-449.)

Textiles, books and papers stored for long periods are likely to be damaged by *Niptus hololeucus* Falz. common in central Europe. Details of anatomy and biology given.

410. MARLATT, CHARLES LESTER. Cockroaches. Washington, D. C., 1902. 15 p. illus. 8°. (United States. Division of Entomology. Circular. series 2, no. 51.) QIQ (U. S.)

Revised reprint of certain pages from Bulletin new series, no. 4, of the same division. Cockroaches in general and how to get rid of them.

411. MARLATT, CHARLES LESTER. The silver fish, *Lepisma saccharina* Linn. Washington, D. C., 1902. 4 p. illus. 8°. (United States. Division of Entomology. Circular. series 2, no. 49.) QIQ (U. S.)

Habits, life history, and control measures. A revised reprint from the pages of Bulletin, no. 4, new series, of the same division. For later revisions see Farmers' bulletin no. 681 by the same author, and nos. 902 and 1665 by E. A. Back.

412. MARSTON, E. Real bookworm may be seen here. [By E. Marston.] (Publishers' circular and booksellers' record. London, 1904. 4°. v. 81 [new series, v. 30], p. 422.) † GDD

Erroneous account of damage by *Lepisma* in the book store of C. D. Raymer, Minneapolis, Minn., reprinted from the Minneapolis *Daily News*. Correction by Edward Step, p. 452.

413. * MARTELL, P. Insektenfeinde der Bücher. (Buchhändlergildeblatt. Berlin, 1919. Bd. 3, p. 317-320.)

Cf. Mejer, *Bibliographie der Buchbinderei-Literatur*, Leipzig, 1925, no. 2264.

414. MARTELL, P. Insektenfeinde der Bücher. (Entomologische Zeitschrift. Frankfurt am Main, 1913. 4°. Jahrg. 27, p. 142-143, 147-149.) † QII

A review of ten species of book pests and one friendly species, *Chelifer concavoides*. Carbon disulphide as a fumigant.

415. MARTIN, HENRY. Concours pour l'étude des insectes ennemis des livres, rapport général. (Bibliothèque de l'École des chartes. Paris, 1902. 4°. tome 63, p. 687-695.) DA

Abstracts in various journals: *La Bibliophilie*, Firenze, 1902, anno 4, v. 4, p. 331, † GAA; *Centralblatt für Bibliothekswesen*, Leipzig, 1903, Jahrg. 20, p. 484, * HA; *Library journal*, New York, 1902, v. 27, p. 1026, * HA; *Mémorial de la librairie française*, Paris, 1902, année 9, p. 493-494, * GDF; *Tijdschrift voor boek- en bibliotheekweten*, Antwerpen, 1904, jaarg. 2, p. 60-62 (in French), * GAA.

The full report discusses some of the more important manuscripts submitted and announces the prize winners, Constant Houlbert for the 500 franc Prix de Marie Pellechet (the 1000 franc prize was not awarded) and Johann Bolle for the 1000 franc Prix du Congrès des bibliothécaires. Houlbert's paper after revision was printed in book form in 1903. Bolle's work does not seem to have been printed.

416. MASSINGHAM, H. J. Bookworms. (Notes and queries. London, 1915. 8°. series 11, v. 12, p. 138.) * R-DA

A fight with the pests and a call for help. Answers: v. 12, p. 185-186, St. Swithin [pseud.] and William H. Peel give references to literature; p. 208, Robert Pierpont quotes remedy of alum and birch bark; p. 268-269, J. S. Udal cites Zaehnstorff's remedies — corrosive sublimate for boring worms and varnish for cockroaches, other remedies mentioned; p. 269, C. I. Hutchins points out dangers to paper when formaldehyde is used; p. 308, St. Swithin again; p. 330, Pierre Turpin gives ancient use of cedar oil; p. 370, M. L. R. Breslar believes modern cedar oil is available as an extract of Lebanon wood used by jewellers.

417-419. MATAGRIN, AMÉDÉE. Les ennemis du papier et comment on l'en préserve: partie II, Les insectes. (La Papeterie. Paris, 1925. f°. année 47, p. 562, 565-566, 614, 617-618.) 3-† VMA

A review of the literature ancient and modern, the more injurious insects and the remedies and general precautions to be observed in libraries.

Twentieth Century, continued

MEHTA, MISS M. M., JOINT AUTHOR. *See* SUDBOROUGH, J. J., AND MISS M. M. MEHTA.

420. MEYER, J. B. Welche Mittel stehen uns heute zur Verfügung, um die Zerstörungen der Bücher durch Altern und Organismen aller Art zu verhindern. illus. (*Blätter für Buchgestaltung und Buchpflege*. [Leipzig, 1930.] 4°. [Jahrg. 1.] Heft 4, p. 5-8.)

Conserving agents for the lime used in binding. Illustrations of damage on the cover and on p. 2.
Copy: NNC.

421. MOHR, E. Biologisches über *Lepisma saccharina L.* illus. (*Zoologischer Anzeiger*. Leipzig, 1923. 8°. Bd. 56, p. 174-181.) QGA
Notes on its biology and feeding habits, with an illustration of damage to a manuscript.

422. * MOLL, FRIEDRICH. Schutz unserer Bücher gegen Wurmfrasz. (*Börsenblatt für den deutschen Buchhandel*. Leipzig, 1933. 4°. Jahrg. 100, Nr. 160, p. 508.)

Cf. Mejer, *Bibliographie der Buchbinderci-Literatur, Ergänzungsband*, Leipzig, 1933, no. 1659a.

423. MORGANA, MARIO. Restauro dei libri antichi con nove incisioni nel testo e undici tavole. Milano: Hoepli, 1932. 192 p. 16°. (Manuale Hoepli.)

See particularly p. 169-170 for insects affecting books.

Copies: DLC, MH, NNC.

424. MORITA, H. Some observations on the silverfish. (*Hawaiian Entomological Society. Proceedings*. Honolulu, 1926. 8°. v. 6, p. 271-273.)

Life history with general information relative to distribution and feeding habits.

425. MUTCHLER, ANDREW J., AND HARRY B. WEISS. The Dermestid beetles of New Jersey including the carpet beetles and those which feed on animal products. Trenton, N. J., 1927. 31 p. illus. 8°. (New Jersey. Department of Agriculture. Circular no. 108.) VPZ

Life histories, control measures, etc., of numerous species, several of which are injurious to books, with keys for identification and a bibliography of scientific literature.

426. MYSTERIOUS insects bore into roll of paper. illus. (*Paper trade journal*. New York, 1924. 4°. v. 79, no. 9, p. 31.) † VMA

A roll of paper from Finland found infested with a minute insect resembling a yellow ant. Illustration of damage.

427. NEW pest attacks books. (Pacific bindery talk. Los Angeles, 1933. 8°. v. 5, p. 103.) * ITA (Bindery)

Taken from the ** Graphic arts monthly*, London, 1932? A report of an unnamed insect which looks like a clothes moth destructive to leather bindings and paper.

428. NORRIS, JOHN. Preservation of paper. (*American Newspaper Publishers Association. Bulletin*. New York, 1912. 8°. no. 2795 [B special], p. 1133-1140.)

Reprint: New York: The Association, 1912. 1133-1140 p., VMP p.v.2, no.5.

This article is concerned with the storage conditions of newsprint and newspapers. The author in a short

paragraph mentions several insects but believes that damage by them is negligible in northern latitudes.

NOVINENKO, A., JOINT AUTHOR. *See* AVERIN, V., AND A. NOVINENKO.

429. O'FLAHERTY, FRED, AND WILLIAM T. RODDY. Some notes on beetles and their damage to hides and leather. illus. (*American Leather Chemists Association. Journal*. Easton, Pa., 1933. 8°. v. 28, p. 298-306.) VMK

Dermestes vulpinus and *Necrobia rufipes*, including damage to hooks. Life history and control measures. For hooks a temperature of 125° F is fatal to the beetles.

430. OISHI, T., AND OHBAKYO SEISHI KABUSHIKI KAISHA. [Insect-proof and water-proof paper.] (Japanese patent 38,494, April 23, 1921.) * V

A mixture of pasty "Hydrosme revierii" (0.4-0.7 in 100 H₂O) 0.2 Na₂CO₃·NaHCO₃·2H₂O and 6 parts cupric ammonium arginate solution (5 per cent.) is painted on strong paper and dried. — *Chemical abstracts*, 16:1317.

431. OSLER, SIR WILLIAM. Illustrations of the book-worm. col'd pl. (Bodleian quarterly record. Oxford, 1916. 8°. v. 1, p. 355-357.)

* HPD (Oxford)

Records several illustrations of bookworms. Bodleian Library stated to be "singularly free from ravages." Damage by *Anobium hirtum* to a privately-owned hook and an illustration of this insect in color.

Also reprint: [Oxford, 1917.] 5 p., col'd pl. 8°. * HB p.v.17.

431A. OTLET, PAUL. Conservation, altération, destruction du livre et du document. (In his: *Traité de documentation, le livre sur le livre, théorie et pratique*. Bruxelles: Van Keerberghen & fils, 1934. 8°. p. 328-333.) * HG

Concerning all forms of destruction, natural and man-made. Only a short paragraph on insects and remedies.

432. OTTINO, GIUSEPPE. Nemici dei libri; topi e tarli; disinfezioni. (In his: *Bibliografia. Terza edizione...* Milano: Hoepli, 1916. 16°. p. 327-333.) * GAC

Manuali Hoepli.

Earlier editions have very little on bookworms. Reviews chemical methods of destruction. Chlorine not recommended on account of its injurious effect on paper; use carbon disulphide or formaldehyde instead.

433. PAGDEN, H. T. Notes on the destruction of some household pests. (British Solomon Islands. Agricultural gazette. Suva, Fiji, 1934. 8°. v. 2, no. 1, p. 9.)

To protect books against cockroaches and other insects it is recommended that the covers and inside edges be painted with the following solution applied with a wide, flat brush: 1 pint methylated spirits, 1 pint Chinese varnish, 1 ounce dichloride of mercury, 1 ounce white crystals of phenol. A single application is effective for about two years.

434. PEREGRINO DA SILVA, MANOEL CICERO. A Biblioteca nacional em 1903. Relatório que ao Sr. Dr. José Joaquim Seabra, ministro da justica e negócios interiores [Brazil]... (Brazil. — Biblioteca Nacional. Annaes. Rio de Janeiro, 1904. 4°. v. 26, p. 481-524.) * GY (Rio)

Records the fight against the *Anobium* pest in the national library. Experiments with formaldehyde and calcined alum, p. 502.

Twentieth Century, continued

435. PEREGRINO DA SILVA, MANOEL CICERO. A Biblioteca nacional em 1905. Relatorio que ao Sr. Dr. José Joaquim Seabra, ministro da justiça e negócios interiores [Brazil]... (Brazil.—Biblioteca Nacional. Annaes. Rio de Janeiro, 1906. 4°. v. 28, p. 497-532.) * GY (Rio)

Records experiments with Clayton gas and its effects on *Anobium*, p. 515-516.

436. PETIT formulaire: la preservation des livres contre les insectes. (Le Courrier du livre. Paris, 1908. 4°. v. 10, p. 265.) * IAA

Method of keeping books in a closed bookcase free from insects.

437. PEUS, F. Flechtinge als Wohungs- und Materialschädlinge, besonders in Neubauten. illus. (Zeitschrift für Gesundheitstechnik und Städtehygiene. Berlin, 1933. 4°. Jahrg. 25, col. 483-490.)

Thorough drying is said in most cases to end an infestation of these psocids. When libraries are infested it is necessary to trace the infestation to its source and eliminate it.

438. PIER, FLORIDA. Bookworms, etc. (Harper's weekly. New York, 1910. f°. v. 54, no. 2790, June 11, p. 27.) * DA

An essay.

439. PRÉSERVATION des livres contre les insectes. (Union syndicale des maîtres imprimeurs de France. Bulletin officiel. Paris, 1904. f°. série 2, année 8, no. 2, p. 12.) †* IPA

Reprinted in *Mémorial de la librairie française*, Paris, 1904, année 11, p. 216.

Recommends the use of sandal and camphor woods in the library, and carbon disulphide as a fumigant for the books.

440. PRESERVATION of rare books and manuscripts. (Huntington Library bulletin. Cambridge, Mass., 1933. 8°. no. 3, p. 167.) * HND (Henry)

A short note on the discovery of bookworms in the library in 1928 and the new fumigant, carboxide.

441. PRÜMERS, RODGERO. Die Insekten als Papierfeinde. illus. (Archivalische Zeitschrift. München, 1907. 8°. N. F. Bd. 14, p. 22-38.) ELB (Bavaria)

Summarizes important parts of Houlbert's book and gives the results of an experiment with carbon disulphide at the Kgl. Staats-Archiv zu Posen Platz.

442. * PRÜMERS, RODGERO. Die Papierfeinde aus dem Insektenreiche. illus. (Gesamtverein der deutschen Geschichts- und Altertumsvereine. Korrespondenzblatt. Berlin, 1905. 4°. Jahrg. 53, p. 444-451.)

Interesting details from Houlbert's book in a paper presented before the 5th Deutscher Archivtag.

443. PYCRAFT, WILLIAM PLAYNE. Concerning "silver-fish." illus. (Illustrated London news. London, 1931. f°. v. 178, p. 374.) * DA

Thysanura, the extremely primitive form of insect life, its habits and damage to paper. Illustration of *Lepisma sacch.*, and one of its scales.

444. RAFF, J. W. Notes on silver-fish. (Victorian naturalist. Melbourne, 1933. v. 50, p. 11-115.)

Recorded as feeding on brown paper smeared with bookbinder's paste, blotting paper, tissue paper, etc.

445. REED, EDWARD O. Bookbinding cloths; destruction of bookbinding cloths by insects. (United States. Government Printing Office. Annual report of the public printer for 1927. Washington, D. C. [1928.] 8°. p. 82-86.) * IPG

Summarized in "Interesting bindery data in government report," *Bookbinding magazine*, New York, 1928, v. 7, no. 5, p. 25, 57, † ITA. See also entry no. 406.

The technical director describes experiments and results. For temperate climates cellulose-coated fabric, oilcloth and unsized duck have been found immune to the croton bug and the large American cockroach. Flexible cellulose lacquers (imitation leather) found most satisfactory.

446. REH, L. Eine Mottenraupe als gefährlicher Bücher-Schädling. illus. (Gesellschaft für Corratsschutz. Mitteilungen. Berlin, 1928. Jahrg. 4, Nr. 3, p. 35-36.)

Larva of a moth *Tinea fuscipunctella* Hw. found destroying bindings, mostly pigskin, in Germany. Biological notes and fumigation. — Colledge.

447. REINICKE, WILLIAM R. Insects destructive to books. illus. (American journal of pharmacy. Philadelphia, 1910. 8°. v. 82, p. 551-562.)

Reprint: [Philadelphia,] 1910. 551-562 p. 8°. QIP p.v.7.

Also in *Scientific American supplement*, New York, 1910, v. 70, no. 1825, p. 408-410, VA; *English mechanic and world of science*, London, 1911, v. 93, p. 165-167 (without the illustrations), VA. Summarized by R. W. Sindall, "Maggots," *Paper makers' monthly journal*, London, 1911, v. 49, p. 152, † VMPA. Abstract in *Le Papier*, Paris, 1911, année 14, p. 197, † VMA.

A general article including a short review of some of the literature and a classification of insects by the part of the book attacked. Puts more faith in general cleanliness than in poison. Quotes the poem of Robert Burns.

448. REINICKE, WILLIAM R. Insects destructive to books. Second contribution. A lecture delivered at the University of Pennsylvania. illus. (American journal of pharmacy. Philadelphia, 1911. 8°. v. 83, p. 503-515.)

Reprint: [Philadelphia,] 1911. 503-515 p. 8°. • HB p.v.27.

Also in *Scientific American supplement*, New York, 1912, v. 73, no. 1897, p. 292-294, VA; *Societas entomologica, Organ für den Internationalen entomologischen Verein*, Zurich, 1912, Bd. 27, p. 3-6, 9-11 (in English); *Medical Library Association of Baltimore, Bulletin*, Baltimore, 1912, new series, v. 1, p. 67-75. Abstract: "Les ennemis du papier," *Le courrier du livre*, Paris, 1911, année 13, p. 1136, * IAA.

This paper is a general account of various insects injurious to books incorporating some of the author's deductions and theories relative to the food habits of certain insects.

449. REINICKE, WILLIAM R. The insidious bookworm. illus. (Bookman. New York, 1924. 8°. v. 59, p. 573-578.) * DA

A general account of damage throughout the world by various insects; review of prizes, literary references, and remedies. Records poison binding experiments and the destruction of worms by the application of heat at the College of Physicians of Philadelphia. The poem of Evenus quoted. Reinicke's quotations of the "riddles," erroneously ascribed to Cynewulf, are taken from Stopford A. Brooke's *History of early English literature*, London, 1892, v. 1, p. 317, NEH. For the riddle see *Codex exoniensis*. The other two quotations linked with the riddle do not apply.

Twentieth Century, continued

450. REINICKE, WILLIAM R. Ravages of the bookworm. illus. (Paper industry. Chicago, 1921. 4°. v. 3, p. 819-823.) ^{† VMPA}

Extracts: "Paper-eating insects; ravages of the bookworm," *World's paper trade review*, London, 1921; v. 76, p. 1738, 1740; *VMPA*. Abstract: "The real bookworm," *Mentor*, New York, 1922, v. 10, no. 2, p. 36. *SST*.

It is claimed that there are over 160 species that may be classed as bookworms: paste eaters, paper eaters, and eaters of binding materials. Remedies are indicated and experiments on insect-proof bindings are recorded.

451. REINICKE, WILLIAM R. Unpaid creators of new book business. illus. (Publishers' weekly. New York, 1922. 8°. v. 101, p. 1685-1687, 1755-1756.) ^{* GDB}

General article on the damage caused by various insects including crickets. One hundred and forty-six species reported as being destructive to books. It is stated that there are over 800 references to the subject including thirty-three poets.

ROARK, R. C., JOINT AUTHOR. See COTTON, RICHARD THOMAS, AND R. C. ROARK.

452. ROBERTSON, MADGE E. Recent work on methods of dealing with insect pests. (Leather world. London, 1933. 4°. v. 25, p. 582-583.) ^{VMA}

Discusses experiments with heat, cold, chemical disinfectants used in gaseous form and as a powder, spray or wash. Bookworms included. Gives references to original articles.

RODDY, WILLIAM T., JOINT AUTHOR. See O'FLAHERTY, FRED, AND WILLIAM T. RODDY.

453. ROLLINS, CARL PURINGTON. Death of a bookworm. (Saturday review of literature. New York, 1932. f°. v. 8, p. 723.) ^{† NAA}

The Huntington Library experiments, from its fourth annual report.

454. ROSEWALL, OSCAR W. The biology of the book-louse, *Troctes divinatoria* Müll. illus. (Entomological Society of America. Annals. Columbus, Ohio, 1930. 4°. v. 23, p. 192-194.)

Studies in the life history of the book-louse. The author believes that the species is parthenogenetic.

455. RUSS, J. M., JR. Ethylene oxide and ethylene dichloride, two new fumigants. (Industrial and engineering chemistry. Easton, Pa., 1930. f°. v. 22, p. 844-847.) ^{† VOA}

Liquid ethylene oxide mixed with liquid carbon dioxide is known commercially as carboxide, the fumigant later used at the Huntington Library. Methods of application and dosages are given for the fumigants mentioned. Extermination of cockroaches, silverfish, and carpet beetles.

456. RUSSELL, T. A. The care of books. (Bermuda, Department of Agriculture. Agricultural bulletin. Hamilton, Bermuda, 1934. 8°. v. 13, p. 85-86.) ^{VPY}

Damage by cockroaches and boring beetles successfully combatted by using Prof. Ballou's solution. See Ballou.

457. SANDERS, J. P. Method for the preservation of book bindings. (Science. New York, 1932. 4°. new series, v. 76, p. 277-278.) ^{OA}

A mixture of halowax and lanolin in solution when applied to bindings makes an effective repellent towards fungus diseases, insects, and rodents.

458. SANDERS, J. P. The preservation of manuscripts and bindings. (Library journal, New York, 1932. 4°. v. 57, p. 936-938.) ^{* HA}

Halowax as a preservative which also acts as an insect repellent.

459. SAYLE, C. Apropos of bookworms. [By C. Sayle.] (Bodleian quarterly record. Oxford, 1917. 8°. v. 2, p. 5.) ^{* HPD (Oxford)}

An anecdote concerning the discovery of a bookworm in the Oxford College Library, 1887.

460. SCARONE, ARTURO. El libro y sus enemigos. Estudio sobre los insectos que invaden las bibliotecas, museos y archivos. Montevideo: Imprenta y casa editorial "Renacimiento," 1917. 207 p. illus. 8°. ^{* HHL}

One of the more important works on the subject, based on French, Spanish, and Latin American sources. Contains an historical survey, description and habits of many insects, damage caused and methods of control, with a recapitulation of control measures by insect. Bibliography of some thirty-seven items, many of a strictly biological nature.

461. SCHOENGEN, M. Ueber Erhaltung und Ausbesserung der Archivalien. (Congrès international des archivistes et des bibliothécaires, Brussels, 1910. Actes publiés par J. Cuvelier et L. Stainier. Bruxelles: Au siège de la Commission [permanente], 1912. 8°. p. 555-564.) ^{* HA (International)}

The first part of this article discusses insect control measures on a large scale, including Bolle's method and apparatus. Schoengen was the archivist at the Rijks-Archief in de Provincie Overijssel, Zwolle, Netherlands.

462. SCHREIBER, HEINRICH. Ein bibliothekarisches Kapitel Buchpflege. (Blätter für Buchgestaltung und Buchpflege. Leipzig [1930]. 4°. Jahrg. 1, Heft 3, p. 11-14.)

The responsibilities of a librarian, including protection of books from insects, dust, dampness, etc.
Copy: NNC.

463. * SCHREIBER, HEINRICH. Kampf mit Bücherfeinden. (Sankt Wiborada. Bibliophiles Jahrbuch für katholisches Geistesleben, hrsg. von Hans Rost. Westheim b. Aags.: Wiborada Verlag, 1934. 4°. Bd. 2, p. 138-139.)
Cf. Internationale Bibliographie des Buch- und Bibliothekswesens, Leipzig, 1934, p. 125.

464. SCHUTZ für Bücher gegen Insekten. (Papier-Zeitung. Berlin, 1932. 4°. Jahrg. 57, p. 1288, 1295, 1320.) ^{† VMA}

An anonymous query from the Netherland East Indies with answers giving various remedies. On p. 1295 it is stated that the yellow pigment obtained from the bark of *Phellodendron amurense* Ruprecht, a tree native to China and Japan, has long been used in eastern-made paper for protection against insects.

465. SECQUES, FRANÇOIS. Destruction par le formol des insectes qui attaquent les livres. (Société zoologique de France. Bulletin. Paris, 1908. 8°. v. 33, p. 112-114.) ^{QGA}

Formaldehyde as an insecticide.

466. SECQUES, FRANÇOIS. Sur la destruction des insectes qui attaquent les livres. (Société zoologique de France. Bulletin. Paris, 1907. 8°. v. 32, p. 100-101.) ^{QGA}

Recommends putting the books in a hermetically sealed container with formaldehyde vapor at 50-60°C. for a period of two or three days.

Twentieth Century, continued

467. SÉE, PIERRE. *Les maladies du papier piqué. Les champignons chromogènes qui les provoquent, les modes de préservation.* Paris: O. Dion et fils, 1919. 168 p. illus. 8°. VMP

Much damage attributed erroneously to insects; fungus plays its part. First few pages devoted to insects.

SIIAW, MERLE B., JOINT AUTHOR. *See WEBER, CHARLES GOULD, AND OTHERS.*

468. SHIPLEY, SIR ARTHUR E. *Bookbinding for the tropics. (Tropical agriculture.* Trinidad, 1926. 4°. v. 3, p. 141-142.) VPA

Describes experiments in Trinidad, Jamaica, Porto Rico, Cuba, and the United States on the insect-proofing of bindings. Formulas are given.

469. SHIPLEY, SIR ARTHUR E. *Enemies of books. (Tropical agriculture.* Trinidad, 1925. 4°. v. 2, p. 223-224, 244-246.) VPA

The first part is a description of various insects not strictly confined to the tropics. The second part is concerned with the protection of books in the tropics, suggesting various remedies principally carbon disulphide. The use of a mixture of corrosive sublimate and creosote suggested.

470. SILVADO, JAIME. *Nota sobre a destruição dos insetos bibliófagos e a conservação dos livros.* (Tribuna médica. Rio de Janeiro, 1911. 8°. anno 16, p. 245-251.)

Records experiments with formaldehyde and sulphur gas. Formaldehyde found ineffective as it did not penetrate the books. Sulphur dioxide with Clayton apparatus is recommended.

471. [SILVERFISH.] (Ontario Agricultural College and Experimental Station, Guelph. Annual report for 1917. Toronto: Wilgress, 1918. 8°. no. 43, p. 19.) VPG

A species of *Lepisma* found damaging wall paper, book bindings, etc. Sodium fluoride used successfully as an exterminator.

472. SMITH, FREDERICK RICHARD. *Bookbinding.* London: Pitman & Sons, 1929. 113 p. 12°. *ITR

See p. 108. Trivial as far as bookworms are concerned but included to show that even in recent years the injury to paper caused by extreme changes in temperature and exposure to the direct rays of the sun is not generally known.

On p. 108 the author recommends exposure of the books to the sun or subjecting them to heat.

473. SNYDER, THOMAS ELLIOTT. *Preventing damage by termites or white ants.* Washington, D. C., 1926. 22 p. illus. 8°. (United States Department of Agriculture. Farmers' bulletin. no. 1472.) VPZ

Life history, habits, and control outlined. Illustration of damage to a roll of revenue stamps by *Reticulitermes flavipes*.

474-475. SNYDER, THOMAS ELLIOTT. "White ants" as pests in the United States and methods of preventing their damage. Washington, D. C., 1916. 20 p. illus. 8°. (United States Department of Agriculture. Farmers' bulletin. no. 759.) VPZ

For later revisions see bulletins no. 1037 and 1472. Damage to books on p. 8. Illustrations of damage

to books and paper, p. 10-11 (library book in Van Buren, Arkansas, and documents in Washington), *Leucotermes flavipes* to blame in the last instance.

SNYDER, THOMAS ELLIOTT, JOINT AUTHOR. *See BANKS, NATHAN, AND THOMAS E. SNYDER.*

476. SOCIÉTÉ DES BIBLIOPHILES DE MONS.

This society offered a gold medal of the value of five francs for certain and easy methods of conserving books and preserving them from the attacks of insects, 1842. The medal was never claimed according to Houbert.

477. STEHLÍ, GEORG. *Insekten, die unsere Bücher fressen.* illus. (Kosmos. Stuttgart, 1913. 4°. Jahrg. 10, p. 135-139.) PQA

Reprinted under same title in *Papier Zeitung*, Berlin, 1913, Jahrg. 38, Nr. 39, p. 1456-1458, illus., 3-4 VMA.

A short description of *Anobium panicuum*, *Dermestes lardarius*, *Lepisma saccharinum*, *Anthrenus museorum*, *Troctes divinatorius*, *Cheyletus eruditus*, and *Atropos pulsatorius* with its enemy *Chelifer cancrinoides*.

STEPHEN, GEORGE A., JOINT AUTHOR. *See COUTTS, HENRY T., AND GEORGE A. STEPHEN.*

STEVENS, HENRY P., JOINT AUTHOR. *See BEADLE, CLAYTON, AND HENRY P. STEVENS.*

478. SUDBOROUGH, J. J., AND MISS M. M. MEHTA. *The perishing of paper in Indian libraries.* (Indian Institute of Science. Journal. Bangalore, 1920. 8°. v. 3, part 7, p. 119-226.) PKA

"Perishing" is a process of hydrolysis which afflicts paper in the plains country of India. Among other things this investigation brought to light was the fact that the treatment of paper with arsenic preparations or corrosive sublimate in order to ward off insects hastened the perishing process, see p. 181, section of summary no. 10, and no. 12. Recommends naphthalene balls to prevent insect attacks, p. 184, section no. 14.

479. TAYLOR, RAYMOND L. *The destructive Mexican book beetle comes to Boston.* (Psyche. Boston, 1928. 8°. v. 35, p. 44-50.) QII

Abridged version: "A foreign book pest enters Boston" in *Journal of economic entomology*, Geneva, N. Y., 1928, v. 21, p. 626-627.

Records severe damage by a species of *Catorama* to a large shipment of books from Honolulu to Boston, hand-made paper suffering particularly. Includes biological notes and a bibliography of *Catorama herbarium* and *Catorama mexicana*.

480. TERMITE INVESTIGATIONS COMMITTEE. Termites and termite control...a discussion of the biology of termites, and an account of the termites of the United States, Mexico, the Canal Zone, the West Indies, Hawaii, and the Philippine Islands, with recommendations for the prevention and control of termite damage by methods of construction and the use of chemically treated and unpalatable woods. Charles A. Kofoid, editor-in-chief. Berkeley: University of California Press, 1934. 734 p. illus. 8°. QKB

A symposium. For damage to books and paper see p. 167-168, 183-184, 300, 302, 307-308, and paper poisoning test, p. 401-403, and tables 30-31. Illustrations of damage to books. Species particularly mentioned for injury to books are: *Reticulitermes hesperus* and *flavipes*, *Coptotermes formosanus*, *Cryptotermes brevis*, *Kalotermes hubbardi*, and several species of *Heterotermes*.

Twentieth Century, continued

481. [TERMITES.] (Pacific bindery talk. Los Angeles, 1935. 8°. v. 7, p. 130.) * ITA (Bindery)

Reprinted in *Library journal*, New York, 1935, v. 60, p. 299. * HA. Termites damage bound volumes of magazines at the Public Library, Santa Monica, Cal. Erroneously said to be the first instance of its kind.

482. TESTI, GINO. Malattie e restauri dei libri. (Accademie e biblioteche d'Italia. Roma, 1933. 8°. anno 7, p. 162-166.) * HA

Among other maladies, the bookworm.

THOMAS, H. E., JOINT AUTHOR. See VAN ZWALUWENBURG, REYER HERMAN, AND H. E. THOMAS.

482A. TOWNE, C. M. E. Autobiography of master bookworm. Lansing, Mich.: Ellison Book Shop, 1935. 24 p. 16°.

A reprint of an older article "which purports to trace the adventures of a cheerful and harmless bookworm through the various books he has inhabited since he was born (in a copy of the Anthology of Caphalus in the Abbey of Malmesbury). He now lives in a first edition of Dr. Johnson's Dictionary at Michigan State University."

483. TUCKER, R. W. E. Insects in houses in Barbados. (Barbados Museum and Historical Society. Journal. Bridgetown, 1934. 8°. v. 1, p. 73-79.)

Cockroaches, crickets, beetles, and *Sitodrepa panicea*. For the protection of books he gives W. J. Blackie's remedies and in addition recommends sodium fluoride dust.

484. TURPIN, PIERRE. Bookworms. (Notes and queries. London, 1916. 8°. series 12, v. 1, p. 414.) * R-* DA

Neat's-foot oil or porpoise oil used successfully by M. A. Herbert Safford.

TWINN, C. R., JOINT AUTHOR. See GIBSON, ARTHUR, AND C. R. TWINN.

485. TYLER, ANNA C. A live bookworm: a nature study. (Library journal. New York, 1908. 8°. v. 33, p. 311-312.) * HA

A short account of a larva found within the pages of an old book bound in vellum. Tentatively identified as a species of *Anobium*.

486. * UNITED STATES.—Printing Investigation Commission. Memoranda relative to binding of publications for distribution to state and territorial libraries and designated depositories ... Washington, D. C., 1908. 46 p.

Copy: DBS.
Contains material on bindings resistant to insect attacks.

487. VAN ZWALUWENBURG, REYER HERMAN, AND H. E. THOMAS. Some means of controlling insects, fungi and other pests in Porto Rico. Washington: Gov. Prtg. Off., 1918. 30 p. 8°. (Porto Rico. Agricultural Experiment Station, Mayaguez. Circular. no. 17.) VPG

On p. 29, directions for protecting books from booklice and cockroaches: corrosive sublimate and carbolic acid.

488. VIOLA, ORAZIO. Una colonia di *Calotermes flavigollis* nell'Universitaria di Catania. illus. (Accademie e biblioteche d'Italia. Roma, 1932. 4°. anno 5, p. 476-482.) * HA

An account of book damage by termites with general information on biology and habits.

489. VOM Bücherwurm. (Zentralblatt für Bibliothekswesen. Leipzig, 1912. 8°. Jahrg. 29, p. 459.) * HA

Damage in the Gymnasial-Bibliothek zu Hadamar in the year 1844.

489A. WEBER, CHARLES GOULD, AND OTHERS. Effects of fumigants on paper, by Charles G. Weber, Merle B. Shaw, and E. A. Back. illus. (United States. National Bureau of Standards. Journal of research. Washington, D. C., 1935. 8°. v. 15, p. 271-275.) VBDA

Research paper RP828.

The authors studied the effects on various papers of the following commercial fumigants known to be effective in killing insect pests: hydrocyanic acid gas, ethylene chloride-carbon tetrachloride, carbon disulphide, ethylene oxide-carbon dioxide which was the one used at Huntington Library, and methyl formate-carbon dioxide. They concluded that "none of the fumigants had any significant effects on any of the papers, which indicated that these chemicals can be safely used for killing insect life in records of permanent value." The experiments were conducted for the sake of the safety of the records in the new National Archives building.

490. WEISS, HARRY BISCHOFF. Insects injurious to books. illus. (American book collector. Metuchen, N. J., 1933. 8°. v. 3, p. 141-147.) * GAA

A general account of the various species known to injure books.

WEISS, HARRY BISCHOFF, JOINT AUTHOR. See MUTHLER, ANDREW J., AND HARRY B. WEISS.

491. [WHITE ants.] (Grand Rapids Public Library. Annual report for 1915/16. Grand Rapids, Mich., 1916. 8°. v. 45, p. 59.) * HND

Reprinted in *Library journal*, New York, 1916, v. 41, p. 934-935. * HA; American library annual for 1916-17, New York, 1917, p. 14, Room 315.

Oak bookcases found infested with ants but few books injured. Cases that were raised above the floor were not attacked. Infested wood burned, and the ants sprinkled with ammonia.

491A. WINTERICH, JOHN TRACY. Ultimate worm-turn. (Saturday review of literature. New York, March 9, 1935. f°. v. 11, p. 543.) † NAA

A short reference to the Huntington Library experiment.

492. YVE-PLESSIS, ROBERT. Petit essai de bibliothérapie ou l'art de soigner et restaurer les livres vieux ou malades. Paris: H. Daragon, 1900. 95 p. 12°. * HHL

Fumigation, p. 10; repairing worm-holes, p. 54, 71.

493. * ZELL, THEODORE. Bücherfeinde im Tierreich. illus. (Arena. Berlin, 1908. Jahrg. 3, p. 337-340.)

Cf. reference no. 2276 in Wolfgang Mejer's *Bibliographie der Buchbinderei-Literatur*, Leipzig, 1925.

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